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THE

DENTAL REVIEW.

DEVOTED TO THE ADVANCEMENT OF
DENTAL SCIENCE.

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TABLE OF CONTENTS.

ORIGINAL COMMUNICATIONS.

A Case in Practice 837
A Case of Bridge work 721
A Cursory Survey of Some of the Papers Presented to the Columbian Dental Congress 85
A Few Considerations in Surgery for the Dentist 1, 93, 168
A Few Suggestions Relative to Cervical Margins 719
A Review of New Remedies 865
Amalgam 416
Amalgams, Under What Conditions May They be Used Successfully 248
Another Death from Chloroform 512
Answers to Questions Concerning Anæsthetics and Obtundents 163
Behavior of Gold Under the Plugger 320
Bleaching Teeth 14, 235
Bleaching Teeth, With Remarks on Some Chemical Reactions 240
Case of Restoration of the Nose with Porcelain 731
Dental Education of the Public 785
Dentilavus Detergens 259
Diseases of the Peridental Membrane and the Uric Acid Diathesis 449
Disinfectants 10
Doctorate Address 305, 392
Electricity in Dentistry 568
Electro-Therapeutics 878
Elements of Success 403
Etiology and Pathology of Inflammations of the Mucous Membrane of the Upper Air Passages 244
Etiology of Dental Caries 493
Extirpation of the Dental Pulp by the Use of Cocaine 314
Filling Root Canals 881
Finishing Alloy Fillings 218
Fusible Alloys 284
Handwork vs. Machine Work for Dental Operations 6
High Light, Shadow and Middle Tone of Hypnotism 377
Hobbies 609
How Best to Read, Study and Write Dental Literature 350
Hypnotism 353
Jumping the Bite 293, 501, 699
Marginal Lines of Fillings 159
Matured Thought 563
My Medicine Case 736
New Medicines, Their Action and Application in the Mouth 792
Opening Address 777
Operative Technics 223, 323, 426, 516, 584, 627
Oral Surgery 906
Points of Common Interest Both to Dental and Naso-laryngeal Surgeon 473
Practical Dental Education 771
Preparation and Filling of Proximate Cavities in Bicuspids and Molars 850
Preparation and Shaping of Roots of Teeth with Reference to Banding and Crowning 620
President's Address 798
President's Annual Address 98

Progress in Operative Dentistry 386
Reciprocation of force in Orthodontia 572
Relative to Immediate Root Filling, and a Few Items Concerning the Management of Teeth with Pulps Dead Before Treatment 151
Report of Committee on Dental Science and Literature 421
Restoration of the Nose With Porcelain 731
Setting Bridges 59
Some Thoughts About the First Permanent Molar 782
Some Thoughts on the Behavior of Gold Under the Plugger 320
Sulphuric Acid for Opening Root Canals 62
Swaged Aluminum Plates 481
Temperaments 857
The Articulation of Gold Crowns 806
The Delivery of Force by Plugger Points 841
The Knight Combination Crown 814, 937
The Relation of the Profession to our Dental Colleges 409
Thirty Years Ago and Now 547
To Imitate Gold Fillings in Artificial Teeth 373
Treatment and Filling of Pulpless Teeth 743, 790
Treatment and Filling of Pulpless Teeth as Learned from Papers Read at the W. C. D. C 712
Treatment of Pericementitis 175
Treatment of Pyorrhœa Alveolaris 899
What the Dental Congress has Taught Us 75
What Matters of Importance do Good Operators most Frequently Neglect or Overlook ? 724

TRANSLATIONS.

Local Anæsthetics in Dental Surgery 16, 180

PROCEEDINGS OF SOCIETIES.

American Dental Association 603, 690
Chicago Dental Club 652
Chicago Dental Society 25, 103, 186, 262, 287, 439, 664, 919
Joint Meeting of the Iowa and Nebraska State Dental Societies 358
Minnesota State Dental Association 798, 865
Southern Dental Association 604, 690
Southern Illinois Dental Society 822

EDITORIAL.

A Criticism with Suggestions 530
A Model Report 826
A Summer Vacation 592
A Word of Caution 197
A Word to Dental Students 677
Abuse of Bridge work 196
An Apparent Lack in the Writings of Scientific Men 929
An Important Duty 115
Anonymous Communications 679
Clinics at Societies 359
Collect Your Bills, Pay Your Debts 436
Death from Cocaine 275
Dental Colleges 36
Dr. Angle's Appointment 827
Dr. Harlan Retires from the Editorship 34
Dr. W. D. Miller's Appointment 278
Dr. Weeks' Articles 679

Executive Councils in State Societies 438
Fitting Bands to Roots 37
Is the Profession Overcrowded? 825
Lubricate your Disks and Strips 120
New Jersey State Dental Society 594
Platinum Pointed Tweezers 199
Press Back the Festoons 360
Prosthetic Dentistry in Colleges 747
Pyrozone for Bleaching Teeth 276
Record your License 363
Relative Value of Gold and Amalgam in Filling Teeth 361
Responsibilities of a Teacher 750
Technic Teaching in Colleges 277
Testing Amalgam Alloys 752
The Code of Ethics 274
The Dental Degree 273
The Eruption of a Third Set of Teeth 930
The Estimate of Dentists by the Public 118
The Hypnotism Fad 116
The Prevention of Caries 199
The Use of Proper Terms 594
To the Readers of the DENTAL REVIEW 34
What the Profession Offers to Young Men 112

DOMESTIC CORRESPONDENCE.

A Card 279
A Protest Against the use of Glazed Paper 127
Coagulation 760
Letter from Emma Eames Chase 834
Letter from Georgia 761
Letter from H. J. Goslee 687
Letter from Fritz W. Huxmann 369
Letter from C. Edmund Kells, Jr. 538
Letter from A. W. McCandless 208
Letters from New York. 42, 121, 202, 279, 364, 440, 533, 596, 679, 753, 828, 931
Letter from Louis Ottofy 540
Letter from C. N. Pierce 600
Letter from R. 444
Letter from E. A. Royce 47
Letter from H. H. Wilson 937
State Dental Boards and Dental Diplomas 540
The Conversion of Dr. Greene 537
The Cracking of Teeth in Soldering 141

FOREIGN CORRESPONDENCE.

Letter from J. Leon Williams 133
London Letter 128

REVIEWS AND ABSTRACTS.

A Manual of Dental Anatomy 762
A Modern Wizard 372
A Practical Treatise on Mechanical Dentistry 58
A Treatise on Pyorrhœa Alveolaris 542
Books Received 58, 59
Catching's Compendium of Practical Dentistry for 1893 282
Chemistry, General, Medical and Pharmaceutical 763
Compend of Dental Prosthesis and Metallurgy 835

Descriptive Anatomy of the Human Teeth........................ 834
Diseases and Injuries of the Teeth.............................. 57
Dunglison's Medical Dictionary.................................. 58
Etiology of Osseous Deformities of the Head, Face, Jaws and Teeth...... 371
Gray's Anatomy, Descriptive and Surgical........................ 57
Manual of Operative Technics.................................... 762
Pamphlets Received 141, 284, 445, 688, 763
Popular Essays upon the Care of the Teeth and Mouth.............. 141
Students' Quiz Series (Surgery)................................. 57
The Anatomy and Pathology of the Teeth.......................... 835
Transactions of the Dental Society of the State of New York, for 1892-1893. 372
Yet Another Professional Holiday..........................48, 135, 210

MEMORANDA.

MEMORANDA..............64, 143, 219, 287, 373, 445, 543, 603, 689, 764, 839, 939

OBITUARY.

Eames, William Henry..................................291, 376
Godfrey, Walter John.. 376
Henry, Charles.. 698
Kelley, George Washington..................................... 608
Rawls, Albert O... 448
Snowden, Henry.. 220
Southwell, C. P... 546
Wells, Graham A... 546
Winder, Richard B... 607

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

A FEW CONSIDERATIONS IN SURGERY FOR THE DENTIST.

BY GARRETT NEWKIRK, M. D., CHICAGO, ILL.

[INTRODUCTORY PAPER.]

The principles of general surgery are closely involved with those of operative dentistry. The practice of dentistry is in itself largely that of minor surgery. The terms "dental surgery" and "dental surgeon," though largely fallen out of use, are sufficiently appropriate to warrant their continuance.

A definite knowledge of the more recent theories and methods of surgery is essential to the dentist, not only for successful practice and the benefit of his patients, but for his own safety as well. He is daily liable to accidents in his own person, in his office or elsewhere. A competent physician may not be immediately at hand when his services are needed, emergencies may arise involving the safety of one's patient in the office, or a member of his family at home for which he should be ever prepared. Moreover, danger often exists in connection with matters apparently trivial and unimportant, injuries so slight that the calling of a surgeon would be unthought of. All these things indicate that the dentist should be capable, alert and on guard.

The enlargement of the field of microscopy, the extension of original investigation, the development of the germ theories of disease, the actual demonstration of the laws, the sources and the prevention of infection; all these things have modified the theories and almost revolutionized the practice of modern surgery. Some of the developments have been so startling and interesting as to command to a large extent, the attention of the daily press and general public. It is safe to say that within the last decade, more has been done in the way of the general education of the people along these lines, than in any previous period of a century.

Intelligent people have come to a comprehension of many things that were but lately hidden even from the eyes of the scientist himself. Parents are teaching new things to their children. Alert and progressive teachers are imparting the latest information to their pupils, and the youth of our country are growing up with definite ideas as to the laws of health, the nature of disease, the dangers of infection, and the methods necessary to antisepsis and disinfection.

The practice of surgery, more than that of general medicine, has been rapidly coming out from the region of experiment and empiricism, into the clear light of demonstrated fact and accurate knowledge.

It is a matter of satisfaction in practice, no doubt, that we may do things simply because experience has proven them to be of benefit, but the satisfaction is much increased, the practice is certain to be greatly simplified and improved, when we know "the reason why." A definite knowledge of principles enables us to do our work accurately, confidently and easily. Empiricism gropes by a crooked way in the dark, or dim twilight of knowledge; true science walks in light, by a straight path directly to its object.

What is the most essential fact, what is the central principle around which are grouped all other facts and principles in the practice of surgery to-day, as it relates to accidental injuries and to operations?

It is this, I think, that if infection can be prevented of broken surfaces, by whatever cause produced, in the ordinarily healthy subject, restoration will speedily take place. Moreover, there will be, as a rule, no secondary evil effects, general or local.

The second great fact, correlated to the first, is that the instrument by which the broken surface is to be produced, surgically; or the instrument by which it may be produced, accidentally, shall be absolutely clean—aseptic. This with reference to the danger of primary infection.

The third, and immediately connected fact or condition, is that the broken part shall be protected. This with reference to the prevention of secondary infection.

A fourth fact, often of great importance, is that infection having taken place, either in the case in hand, or by some previous injury, the remedy general or local, is to be determined upon and applied.

It is absolutely necessary at the outset, that the surgeon and the dental surgeon shall be fully impressed, down to and through his inmost soul, with the tremendous responsibility resting upon him in relation to the first great fact stated. He must have a realizing sense of what is involved in this question of infection and sepsis. He must feel the force of the now fully demonstrated truth that his professional pathway is in the midst of a multitude of unseen and deadly foes, against whom he may fully protect himself if he will, but who are ready at any moment to take advantage of his errors of ignorance, or carelessness or laziness.

If the dentist has not read a few of the many records of cases —cases that are but a fraction of the unrecorded, wherein the most serious results to health have ensued and life itself sacrificed by infection, he is criminally ignorant—more ignorant than many of his patients. If he has read and has not cared, his case involves dullness of conscience even more hopeless than ignorance. If he has read and cared but failed to comprehend the logic of facts relating to his own methods of practice, he needs to be goaded with a sharp stick, the point of which should be infected with some virus capable of stinging his intellect into action. Efforts in these lines are sometimes discouraging. As it was in old times so it is now, some seed falls upon stony ground where there is not much earth, and some by the wayside where the fowls — old habits, laziness and indifference — gather it up.

Nearly two years ago the author had the honor to read a paper on antiseptic dentistry before the Illinois State Dental Society. Not long after he was in an office where the dentist after the extraction of a tooth from a deceased mouth returned the forçeps into the drawer without disinfection. On my hinting at the matter he replied:

"Oh, yes, I heard your paper, but I never disinfect my instruments—nothing more than simple washing and wiping. That's a good deal better than some do. There's Doctor So and So, I'm much more paticular than he is."

I felt the helplessness of language or reason in this case, and I mention it only for the hope that it may stir somebody to better thinking. There are some who have ever a sense of humiliation because there are others whom they know to be more scientific and better workman than themselves—toward those they strive.

Others there are who are satisfied because they know of some who are doing worse than they—toward these they tend.

Now, I plead with the dentists who read this, and have been heretofore indifferent and careless in their methods, to take the higher trend. Let us be dental surgeons indeed, in knowledge and in practice as we are in name. Let us be fully up to date in the beginning of this year of our Lord 1894.

It is the purpose of these papers to consider some of the means and methods necessary to this end. They are not numerous or complicated. The principles and the methods of modern surgery, so far as they relate to dental practice, are comparatively few and simple. They are not hard nor difficult to comprehend and carry out. The greatest obstacle to their adoption consists in the habits we have formed of doing things in certain ways, which ways have become so easy to us that we dislike to change them. It is mental and moral *inertia*—another name for *laziness*—the bane of the world, the enemy of all progress and reform—that is what ails us.

It is hoped that no dentist before whose eye these lines may come will think for a moment that he is excepted from their application—that because he may be obscure and unknown, located perhaps in some country town, high ideals of excellence do not apply to him.

There could be no greater mistake. He is the man above all others whom the author has in mind as the one most needing stimulation and encouragement. The city dentist has the stimulus of association. He may, if he will, belong to one or more dental societies meeting monthly, and so be continually pushed out of his ruts. The country dentist needs to associate with others as he may through magazines and books. He needs to do a deal of careful reading and thinking, and he must determine to do his best though he stands alone. If he can have but little personal contact with his professional brethren, he has the high privilege of standing shoulder to shoulder with the best of them through their literature, and his own honest, intelligent efforts.

I have no doubt these lines will pass before the eyes of many dentists who have not had the opportunity of witnessing surgery as it is practiced in a first-class modern hospital. For the benefit of these I will describe a typical case, to show the care which is now given to all the details which may have a possible bearing on results; and how everything turns on one pivotal idea—*that of antisepsis.*

A patient comes to the hospital from the country, we will say, for the removal of a tumor of the neck. It is not malignant, but threatens danger by pressure upon important blood vessels and nerves. The operation for its removal will be simple in itself, and in olden times would have been performed at once without preliminary treatment or special precautions. Now, the patient remains in his or her room for several days subject to a special diet. The bowels are thoroughly evacuated, for fear they may have contained infective germs, or a breeding ground for germs, in undigested food. The body of the patient, his clothing and bed are kept scrupulously clean. When the hour for the operation arrives his garments are of the simplest, and aseptic. He is prepared by a nurse whose hands are surgically clean; he is anæsthetized and wheeled on a clean stretcher to the operating room. This room is bare of everything except articles of necessity. There is no upholstering, nothing to harbor dust. The walls, the ceiling, the floor, the plain tables, two or three wooden chairs perhaps, all are clean. The attire of the nurses and assistants is of the simplest, and must be clean. The operator wears a gown reaching from neck to heel; the cloth upon the operating table, the towels, napkins, sponges, cottons, ligatures, are in readiness, with all possibly needed instruments—everything aseptic. The hands of every one must have been thoroughly washed and disinfected with bichloride solution. There is no water used except with bichloride.

When the patient is on the table, which is but little more than a wide, smooth plank with a cloth upon it, there is a special preparation of the parts to be operated upon. They have already been shaved if hairy, now they are thoroughly washed, first with alcohol, then with bichloride solution. An asepticized knife makes the incision, aseptic sponges absorb the blood, aseptic pliers and fingers remove the tumor, aseptic catgut ligates the vessels if any there be that require it, and close the wound when all is done. Probably the parts are now dusted with iodoform, layer after layer of sterilized cotton or gauze is placed over them in such a way that an infectious germ by no possibility may obtain access to the broken tissue.

If the operation to be performed were a capital one, a hip joint amputation or a laparotomy, no more could be done to insure absolute antisepsis. Why? Because it is perfectly well understood that septic poisoning may be equally dangerous in the simple or the complicated case.

These are scientific men who are doing all these things. They have been scoffed at and ridiculed by the men of yesterday and day before yesterday, for their particular attention to so many details. These silly fellows, these "antiseptic cranks," have been wonderfully successful. They have greatly reduced the mortality rates.

Do you think they know what they are about?

How does their carefulness, their faithful adherence to a simple idea, how do their methods of procedure and habits of treatment compare with those of the dentist?

(TO BE CONTINUED.)

HAND WORK VS. MACHINE WORK FOR DENTAL OPERATIONS.*

BY EDMUND NOYES, D. D. S.

The title given by your committee to my paper when the subject was assigned to me implies antagonism between hand work and machine work, or perhaps a discussion of the claims of one to supplant the other, but this paper will rather make some slight attempt to define the scope, characteristics and limitations of each, and to discriminate to some extent the places where each is better than the other, considering them as in no sense antagonistic, but coördinate and complementary to each other.

This is an age of machinery and of machine work, and the machinery has come to stay. It is continually displacing hand work in new and more complicated performances, and though there are some who regret the fact and wish that we might again have a large proportion of manufactured articles made by hand as formerly, such regrets are vain, and attempts in that direction are sure to fail. The most striking characteristics of machine work, especially that of automatic machines, in which the action is not guided in detail by the hand, are uniformity and accuracy, the closeness of which is only limited by the perfection of the machines. The productions of machines of this class are strikingly different from the products of natural growth or development, in the circumstance that the products of the machines are duplicates of each other, and in assembling the parts of the manufactured articles any one of a thousand like pieces will fit equally well with its fellows, and the thousand completed articles will scarcely have any appreciable differences; while nature never makes a thousand things exactly alike, and scarcely even makes two alike. It is a constant source of wonder that nature can make so many millions of faces without exactly duplicating any of them, and if we could compare closely enough we should probably find the same thing true of blades of grass or grains of wheat.

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*Read before the Odontographic Society, November 13, 1893.

In another class of machines (and in this class the dental engine belongs), the actions of the tools are directed in detail by the hand, the object of the machine being to furnish greater power, or more rapid motion, or a different kind of motion from what the hand could give to the tools without the aid of the machine; or it may be to simply relieve the operator of the machine from part of the muscular exertion that would otherwise be necessary. There are only two important methods of applying machine force for the uses of dentistry in operations upon the teeth; one by means of some sort of revolving instrument and the other some contrivance for striking blows; the latter being used only for packing filling materials. The most important limitations of the application of the dental engine are therefore found, because of the fact that much of the work upon the teeth can be done better by some other means than a revolving tool. In a general way it may be said that hand work is better for the removal of decayed or softened material from carious cavities, and the engine tool is better for cutting sound dentine or enamel, except when enamel is undermined by caries or there is a notch reaching to the dentine, in which cases enamel cutting can almost always be better done with hand instruments, either by splitting off in lines of cleavage or by paring along the exposed margin. Fissures in grinding surfaces of molars and bicuspids if but little decayed can usually be cut more rapidly and satisfactorily with the engine, but if decayed to such extent that overhanging enamel can be broken in with a chisel, that is a better way. The extension of proximate cavities into sound dentine and enamel toward buccal and lingual angles can be done much quicker and often more accurately with the engine bur if the places are reasonably accessible. This is especially the case if the cavities are cut, as is usual, from the grinding surfaces. Small proximate cavities may often be opened and enlarged with the engine, suitable access and opportunity being the determining factors. A hand instrument, even a straight drill or bur, can be used more carefully and accurately in a place difficult of access, or through a narrow space, than can a similar instrument in the engine. When we get a good, adjustable angle hand piece, as seems likely to be the case before very long, we can use the engine instruments in a few places not satisfactorily accessible to them now. A right angle attachment will do some things that a straight instrument will not, but the manner of access to the teeth and the necessary lines of direction are such as to make a tool set at an obtuse angle, perhaps about 45°, more generally appropriate than either a straight or right-angled one.

The engine is a very valuable helper for the opening of pulp chambers through fillings or through sound enamel and dentine, sometimes also for removing the "roof" or cover from a pulp chamber by cutting away the floor or bottom of the cavity of decay, but care and watchfulness are necessary in all work with the engine in pulp chambers, for we very often see the results of accidents or mistakes in such work, for instance, the pulps of molar teeth in middle life or old age are sometimes very small and the distance through the chamber very short, so that unless closely watched the drill may enter the chamber and pass through it so readily as to begin cutting upon its floor unperceived by the operator, till he has entered the alveolus in the bifurcation of the roots. I presume most of us have seen openings to the alveolus that were made in that way. I saw a case not very long ago in which a lower incisor had been drilled entirely through, beginning at the usual place on the lingual aspect, but instead of stopping when the chamber was entered (or following the canal, as the operator possibly expected), the drill passed across the pulp chamber and emerged anteriorly at the margin of the alveolus or a little beyond. Engine instruments should not be used in the root canals of teeth. The exceptions to that rule are few and mostly relate to front teeth whose crowns have been broken off, so as to give direct access to the canals with a straight instrument. Even in such cases there is seldom any need of using it.

It may be stated in a general way that the engine is useful and appropriate for the cutting away of fillings, for penetrating a filling or tooth, and for the cutting of sound dentine and enamel whenever that is required and the work is accessible to the engine instruments. Hand instruments are more satisfactory and appropriate for removing overhanging enamel, for the removal of decayed dentine, and usually for the final trimming and shaping of cavities and their margins, and the making of undercuts or retaining grooves.

The engine is an exceedingly useful and important helper in the finishing of fillings. One of our best known operators said to me many years ago when engines were a new thing, that if he never used it in a cavity at all its help in the finishing of fillings would be worth many times its cost, but here, no less than in other work, discrimination is necessary, and we often see instances in which work might have been much better if more hand work had been done. For grinding surfaces, of course nothing is so appropriate as a revolving bur or stone in the engine, but upon proximate surfaces, unless the adjacent tooth is missing, the engine discs should usually be restricted to the buccal and lingual margins and the grinding surface angle. A laborious half-hour's work of packing gold enough to fully restore the bell shaped crown of a bicuspid or molar may easily be destroyed in a moment or two by an attempt to do all the finishing with engine instruments. The rough trimming of the cervical portion should be done with files or cutting trimmers, and the other borders with the same, or with engine instruments as most convenient, and after most of the surplus has been removed there is nothing that will accomplish so satisfactory results in most instances as the flexible narrow corundum tapes. These are the places for an artistic perception of the form required and patient care to realize your ideal. Hand work is capable of versatility, adaptability and individuality in much higher degree than machine work, and where these are important, as in the nice shades of difference in the forms and contours of tooth restorations, the engine should be used sparingly and carefully, and much work done by hand, even though the time required be longer.

I believe it is better that students should not be given the engine too soon, but should acquire strength and skill of hand and facility in performing most operations with hand instruments. This is especially the case in regard to the dummy work of the first year in the technic laboratories. The object in view is to get the widest range of skill and experience and the fullest mastery of all our resources, and if hand work is learned first the student soon becomes master of both hand and engine instrumentation, while if he learns the engine work first he is pretty sure never to learn how to do anything by hand that he can possibly do with the engine.

DISINFECTANTS*.

By H. H. Wilson, D. D. S.

After considerable research for a suitable definition of this word, the question is settled to the satisfaction of your essayist by adopting that given by "The Committee on Disinfectants of the American Health Association." It is, "A disinfectant is an agent capable of destroying the infective power of infectious material." An agent which would entirely remove the odor, hydrogen, sulfid and other mephitic gases arising from a putrescent pulp or from a cesspool, and not remove the cause would not be a disinfectant. Such an agent would be a deodorant. A privy vault may be very offensive to our sense of smell, and yet it may be impossible to disinfect the same, because of there being no infectious material present. In such a case, a deodorant is indicated. But should this vault contain the excreta of cholera or typhoid patients, then a disinfectant is necessary, and only by the use of this agent can such material be rendered harmless. To quote further from the report of the above mentioned committee: "The object of disinfection is to prevent the extension of infectious diseases by destroying the specific infectious material which gives rise to them. This is accomplished by the use of disinfectants. There can be no partial disinfection of such material; either its infecting power is destroyed, or it is not. In the latter case there is a failure to disinfect. Nor can there be any disinfection in the absence of infectious material."

It follows, then, that a disinfectant must be capable of removing or so changing infectious material as to render it harmless, and of destroying bacteria, spores and ptomaines. Hence, a disinfectant is also an antiseptic, a germicide and a deodorant; but an agent may be either of the last three and not be a disinfectant.

A thorough understanding of the meaning of terms is a matter of importance to scientific men, and there is, perhaps, no term in common use among dentists the correct meaning of which is known to so few as is disinfectant. Perhaps this is not a matter of great importance to us, for it may be laid down as a general rule that wherever a foul odor is perceptible, a disinfectant should be used. As the subject of disinfectants in its entirety is altogether too large to be considered in one paper, this paper will consider the subject only as applied to the practice of dentistry. What remedies, then, are the best disinfectants for dentists to use?

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*Read before the Chicago Dental Society, December, 1893.

Probably the agents most in use for this purpose are carbolic acid and bichlorid of mercury; next to these come the essential oils. Let us see what kind of disinfectants these agents are. That carbolic acid, while a very good antiseptic, is not a disinfectant at all, is the unanimous opinion of all investigators. Miller in nine experiments of subjecting glass cylinders, infected with mouth bacteria, to exposures of twenty minutes in five per cent solutions of carbolic acid, found seven to be sterile, while two were not. Other investigators have had less success in much longer exposures, while Frankel kept threads carrying spores of anthrax for forty days in a five per cent solution, and at the end of that time found that the spores still retained their power of development. Miller also found that of twenty-one pieces that had been exposed for varying periods of time ranging from one to twelve minutes, only two were sterilized. Bichlorid of mercury is the most powerful antiseptic in use in the absence of albumen, but is not nearly as powerful a disinfectant, as it generally is supposed to be. Miller found that with a five per cent solution, which is a much stronger solution than is often used, it required about fifteen minutes to disinfect instruments. Of course, a solution of this strength is prohibited in the mouth, and to allow instruments to remain in it for that length of time would certainly be ruinous to them. Dr. Black found that oil of cassia, full strength, was four times as efficacious as bichlorid of mercury where albumen was present, and further states that in this form (full strength) it can be relied upon as a disinfectant. It is the most powerful disinfectant and antiseptic of the essential oils, but its use is much limited owing to its irritating qualities. Miller states that he tried the essential oils in five per cent emulsions and in full strength, but found that they utterly failed to produce the desired action. I was unable to find any separate mention by him of cassia or other oils.

Lysol, an antiseptic introduced to the profession by Dr. V. Gerlach, at Vienna, in May, 1890, probably comes nearer filling the requirements of a disinfectant than any other medicament in general use at the present time. It is derived from coal tar, has much the appearance of molasses, is freely soluble in water, and is non-poisonous and nonescharotic. It forms a soapy-like solution which is useful in removing the visible dirt or grease from the object to be disinfected. Schotellius found that in fifteen to twenty minutes a one-third per cent solution destroyed all kinds of germs. This statement is corroborated by several other experimenters. If this be true, then it would appear that a one per cent solution would act as a positive disinfectant in a root canal.

The pyrozone solutions recently introduced seem particularly indicated for use on the gums and in pockets along the sides of roots, but contraindicated for root canals.

The kalium-natrium process of Dr. Schreier, of Vienna, has received considerable notice of late, especially since the doctor read his paper on this subject before the World's Columbian Dental Congress. The process seems to be founded upon scientific principles, as it is probable that no bacterium or spore could live in the solution or compound produced in infected canals by the introduction of kalium-natrium, but that the heat evolved is sufficient to render the canals and their contents sterile is exceedingly doubtful. The process is certainly worthy of a careful trial by every dentist.

And just here I shall take the liberty to digress sufficiently to call attention to the practice of a portion of our profession who never try any new remedy until it has been thoroughly tested by others. When a new disinfectant or antiseptic is discovered, it is first tested in the laboratories of our bacteriologists, and if there found efficient, it must be tried clinically by many before it can finally be placed in its proper niche in our materia medica. We cannot all be experimenters in, and cultivators of, bacteria, but we can all do our share toward testing clinically those agents which are discovered for us in the laboratories. This, I take it, to be our privilege and our duty. No man can rightfully lay back and say: "I will not try anything on my patients until it has been thoroughly tested by others and found not wanting." Such action is exceedingly selfish.

Of course, the most efficient disinfectant, where it is applicable and permissible, is heat, but it seems to be limited to instruments and root canals. To the latter it may be applied by means of the root drier—that is, the introduction of a heated probe—or by means of hot air injected from a fine pointed syringe. Dr. C. N. Johnson has suggested the use of the Moffat syringe, which seems admirably adapted for this purpose. To instruments, heat is best applied by boiling water, in which an immersion of fifteen minutes will insure thorough disinfection. The addition of a little bicarbonate of sodium will prevent rusting.

But there are several objections to this method in practice, and it has remained for Joseph Arkovy, M. D., professor of dentistry in the University of Buda Pest, in an article in the *Dental Cosmos* for November of the present year, to offer the first practical method of disinfecting instruments. In this he calls attention to the fact that Miller's method of boiling in soda water is impractical for the following reasons: "Partly on account of the disagreeable odor, partly from its cauterizing property, particularly from the time consumed in its application, and last, but not least, its many details." The article should be read by all interested in this subject.

Dr. Arkovy's method, briefly stated, consists of passing instruments two or three times through sterilized sand saturated with some disinfectant. The agents with which he was the most successful were lysol, one hundred per cent, and phenosalyl, twenty per cent. As the former possesses an odor which is offensive to most persons, and as the agent was used full strength, the latter would seem from his experiments to be the best disinfectant to use. But as the experiments do not seem to have included lysol in anything less than fifty per cent, it would be interesting to know what would be the result with solutions of from one-half to two per cent, and it seems strange that the agent was not tried in such strength, as these are the proportions usually recommended.

In bringing this paper to a close, I wish only to say that I have made no attempt at anything original, and if I have succeeded in so refreshing the minds of my hearers as to cause a free discussion of the subject, I will have accomplished my object.

BLEACHING TEETH.*

BY J. E. HINKINS, D. D. S.

In presenting a paper on dental bleaching to such a society as this, it is of course unnecessary to enter into historical details. The first question which arises is: With what elements have we to deal in this operation? The most important are calcium, ferrum, carbon, oxygen, hydrogen and nitrogen.

The discoloration of teeth is probably due to the presence of ferrum in the retained blood. Consequently bleaching must be a chemical process, effected by means of a chemical reaction which so combines the atoms of the offending ferrum with the atoms of the bleaching agent as to render the former colorless. But the greatest care must be exercised that the reaction is not such as to impair the integrity of the tooth structure; and until these two requisites are obtained, we have not found the ideal bleaching agent. Numbers of agents have been proposed: Sulphurous acid (H_2SO_3), chlorine (Cl), aluminum chloride (Al_2Cl_6), oxygen (O), peroxide of hydrogen (H_2O_2), peroxide of sodium (Na_2O_2), chlorinated soda ($2NaCl\ NaClO$) or calcium ($CaCl_2\ Ca\ 2\ ClO$), cyanide of potassium, ($K\ C\ N$) and oxalic acid ($H_2C_2O_4$).

Which of these agents satisfy the required conditions? Only two, the first and the last. If sulphurous acid be used the chemical formula expressing the reaction will be $H_4SO_3+CaCO_3=Ca\ SO_4+H_2O+CO$. Of these the calcium sulphate ($CaSO_4$) is practically insoluble, so that the tooth structure would not be impaired; and to that extent sulphurous acid fulfills the requirements of an ideal bleaching agent, theoretically. But unfortunately, it will be found in practice that this agent is so unstable, and its vapors so irritating to the mucous membranes, as to exclude it from serious consideration.

An examination of the chlorides shows that their action is molecular only. If any chemical reaction were possible, it would produce calcium chloride ($CaCl_2$), which is perfectly soluble, and to that extent would the strength of the tooth be impaired.

The peroxides have not satisfied me, either chemically or by the saponifying properties which Dr. Kirk ascribes to their action.

The cyanide of potassium would probably be a very useful agent, were it not for its toxic properties, which of course exclude it from consideration.

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*Read before the Chicago Dental Society, December, 1893.

In 1887, after a number of experiments on teeth both in and out of the mouth, and as a result of my work in the chemical laboratory and at the operating chair, I decided that a saturated solution of oxalic acid ($H_2C_2O_4$) was the best agent for bleaching the teeth. This conclusion was based on the following facts: The chemical reaction is expressed by the formula, $H_2C_2O_4+CaCO_3=CaC_2O_4+H_2O+CO_2$. The oxalate of calcium thus obtained is the most insoluble of all the salts of calcium, proving oxalic acid to be a fine bleacher theoretically. And the theory is borne out by the facts. Of about seventeen cases which I have so treated all have been thoroughly satisfactory in results.

My method of operating is as follows: After treating the root canal, I fill with gutta-percha, and give the patient another sitting in about four or five days. Applying the dam, I remove the gutta-percha up to the gum margin, or a little beyond, and remove very carefully all decayed matter. Then wash out with water of ammonia, dry carefully and apply the oxalic acid, allowing none of it to come in contact with the enamel of the tooth. Leave the acid in place for about five minutes; after removing it wipe out with cotton and apply ammonia again. The bleaching will be accomplished by about one to three operations of this kind.

My object in using the ammonia so freely is to neutralize any of the acid which might be unabsorbed. It should be kept within reach and ready for instant use throughout the operation, in order to promptly neutralize any drops of the acid which may chance to fall in the wrong place.

The bleaching having been successfully performed, the next step is the filling. This I prefer to do with gold alone, discarding the cement lining which some recommend. My experience has been that the acid seems to combine with the cement to form a new discoloration, necessitating an additional operation and the removal of the cement. In such cases the final result is not, of course, so satisfactory.

In conclusion, I beg leave to introduce a few words in regard to the use of tannic acid. This is a drug which has no place in the dentist's cabinet for the treatment of decayed and especially of dead teeth. I believe that its use is one of the principal causes of so many black teeth. If there is any blood left in the tubuli of the tooth, the salts of iron in the blood will combine with the acid according to this formula:

$H_{22}C_{27}O_{17}+11FeO=C_{27}O_{17}Fe_{11}+11H_2O$.

Now, then, I shall add a few drops of oxalic acid to the tannate of iron. Mark the reaction, which is as follows:

$11H_2C_2O_4\ C_{27}O_{17}Fe_{11}=11FeC_2O_4$ and free $H_{22}C_{27}O_{17}$.

TRANSLATIONS.

Local Anæsthesia in Dental Surgery.

By Maurice Roy in Revue Internationale D'Odontologie.

Although attempts have long been made to obtain local anæsthetics, local anæsthesia, like general anæsthesia, is of recent date. The discovery of the latter, far from obviating the necessity of pursuing the search for the former only made the pursuit more keen. It was in fact the terror inspired by the accidents which at first followed the application of general anæsthesia, which urged surgeons to seek to obtain an anæsthetic which should be strictly confined to the field of operation.

Since its first use local anæsthesia has passed through various phases. Many varieties of soothing and freezing agents have been applied by surgeons in their search for an adequate local anæsthetic.

Numerous attempts were made by the holders of different theories. Certain agents obtained a temporary popularity, but though some experimenters were able to gain satisfactory results in certain cases, the variability of these results soon led to the abandoning of the hope that a reliable agent had been found.

In the last few years, thanks to the progress of chemistry, this question has entered upon a new path; very satisfactory results have already been obtained and local anæsthesia which a short time ago was considered a Utopian dream, is to-day in the domain of the practical. It has already rendered great service to dentists, who now employ it continually and who have contributed to extend its usage in general surgery. It has seemed to us, therefore, that it would be interesting to study a question which is to-day so important.

We propose to study local anæsthesia only from the point of view of the extraction of teeth or analogous operations, intentionally setting aside anæsthesia in the treatment of decay, for, although that is a most interesting subject, it does not enter into the scheme of this article.

Premising then that we possess general anæsthesia, what greater advantages does local anæsthesia offer? The question has been excellently treated by M. Reclus in one of his assemblies. These are his conclusions: with local anæsthesia the danger is less, there is an absence of shock and vomiting, and a lessening or banishing of the pain succeeding an operation. Local anæsthesia being also easy to administer, the saving of time is considerable, and it is possible to dispense with assistance.

These considerations, although formulated from the point of view of general surgery, apply perfectly, with some slight variations, to dental surgery. Let us examine each of these points.

In spite of the spirited attacks made upon local anæsthesia as applied to the extraction of teeth, it is well proved that accidents resulting from its use are much less frequent than in the case of general anæsthesia, even though the former has been largely, and the latter comparatively seldom, employed by dentists. We will return to this subject when we treat of the accidents resulting from the use of cocaine.

We do not need to dwell upon the absence of vomiting. This discomfort, which is the rule in general anæsthesia, never appears in anæsthesia by refrigerants, and only exceptionally in anæsthesia by cocaine. *Protoxyde d'azote* does not, it is true, produce vomiting, but the brevity of the anæsthesia obtained by its action makes it useless in some cases, and bromide of ethyl being easier to employ, as it does not necessitate special and cumbrous apparatus, is certainly preferable to it as a general anæsthetic.

As to the absence of shock the truth is quite evident and certainly important, when the operation to be performed is one of such usually short duration as the extraction of a tooth. Neither need we speak of the diminishing or banishing of pain following upon an operation. This would not generally apply in dental surgery whether the anæsthesia were local or general. To conclude, it is not possible to contest the last three advantages, those directly affecting the operator; local anæsthesia is more easy of application than general anæsthesia; it occasions less loss of time, and the operator is able to dispense with assistance. These considerations are certainly of great importance when one thinks of the nature of operations performed by dentists, and we need not insist upon them.

We shall have occasion to discuss anew the advantages of local anæsthesia when we study further into the varying symptoms of the different cases.

In all time search has been made for a means to render surgical operations painless; sometimes by acting on the whole organism with stupifying substances, sometimes by acting locally on the part to be operated upon. Among the means employed in old times to abolish pain, we may cite the famous stone of Memphis of which Pliny speaks. This stone dissolved in vinegar banished pain in parts which it was necessary to cut or to cauterize. It must have been, according to Littré, a carbonate of lime, which, under the influence of an acid, produced carbonic acid. Indeed this gas has anæsthetic properties which were frequently employed; for one meets "signs of this medication in the greater portion of old authors; also of the use of certain poultices much praised for their soothing and dissolving properties, composed of yeast, crushed grapes, fresh dough," and so on. Percival, in 1771, employed carbonic acid in the form of baths to soothe the pains of cancer; this idea was taken up later by Simpson who extolled the efficacy of carbonic acid douches in ameliorating the pain of uterine cancer; but the very variable results obtained caused the use of this agent to be discontinued. M. Brown-Séquard, has, however, experimented with it anew. From his researches it appears that "one can render insensible the pharynx or the upper digestive and air passages, by directing upon them a rather rapid jet of carbonic acid." This property has been utilized in whooping cough. It is really carbonic acid which acts when one anæsthetizes a locality by projecting upon it the contents of two or three siphons of seltzer water.

In 1784 James Moore proposed to obtain anæsthesia by compression of the nerve centers; but this process which had some success at first, was very soon abandoned.

The same failure attended attempts to produce local anæsthesia by injections of morphine and belladonna.

The various processes which we have just indicated have all remained in the domain of theory, practice having rapidly demonstrated their inadequacy or their dangers. It has not been the same with processes based on refrigeration, and with them we shall enter upon a series of facts much more rich in practical application.

A long time ago the anæsthetic action produced by cold began to be remarked. Hunter noted it. Larrey in a temperature of 10° was able to perform painless amputations at the battlefield of Eylan; but no one had considered making refrigeration a regular method of anæsthesia. It was James Arnott who, about 1855 employed refrigeration methodically. He used a mixture of ice and salt placed in a cloth, and obtained thus a temperature lowered to 10°. Adolphe Richard about the same time employed a mixture of ice, salt and ammoniac salt which produced a lowering of the temperature to 16°.

These efforts in the direction of local anæsthesia, did not leave the dentists indifferent. J. B. George, in 1857, invented an apparatus for the purpose of applying the refrigerating method to the extraction of teeth. This rather complicated apparatus consisted essentially of a sheath of rubber enveloping the part to be anæsthetized and constantly traversed by the refrigerating mixture, ice and salt. This process, however, the author said, did not give him very satisfactory results. It was the same with the apparatus invented by Rottenstein which consisted of a cylinder of metal, one end of which fitted over the gum at the place to be anæsthetized and at the other end of which a spring pressed constantly upon the refrigerating mixture placed in the interior of the cylinder. This arrangement, says the author, has not given me satisfactory results. One of its principal inconveniences was the pain caused in sensitive teeth by the sudden sensation of cold.

Branch, of Chicago, constructed an apparatus nearly analogous to that of Rottenstein, and Blundell, of London, had made one nearly approaching to that of George, but so arranged that the temperature was gradually lowered in a way to avoid sudden contact of the teeth with the cold. All these machines gave, in the majority of cases, unreliable results even when they did not increase pain.

The works of Serres and Flourens and Louget made known an interesting fact; that under the influence of inhalations of ether the tongue and the pharynx would lose their sensibility. Acting upon this idea Simpson and Nunnely began to make experiments which aimed at obtaining local anæsthesia by putting chloroform or ether on the skin, or by completely immersing the painful parts in these liquids; but the results they obtained were almost useless.

Having observed that the action of ether was effectual in proportion to the swiftness of its evaporation, Hardy, Guérard, and Richet invented several apparatuses intended to facilitate this evaporation; but these apparatuses more or less imperfect and cumbrous were advantageously replaced by the atomizer of Richardson which is still in use at the present time. This well-known apparatus acts by a current of air passing through a double tube placed in a bottle of ether, a portion of the current pressing into the bottle making the liquid rise in one of the tubes, the other portion escaping above and atomizing the liquid.

The jet of ether from Richardson's apparatus directed upon the bulb of a thermometer lowers the temperature to 15°; directed upon the skin it causes at first a more or less painful sensation, which is, however, less in proportion to the rapidity with which anæsthesia is produced; and this can occur in a few minutes if the ether is very pure, but if it is poorly rectified, or if it contains alcohol, the action may be much retarded. Sometimes atomized ether acts very slowly on inflamed tissues.

Of all the processes for obtaining local anæsthesia in the last few years, Richardson's apparatus is the one most widely used. A number of surgeons use it still for minor surgical operations such as ingrowing nails. Dentists have attempted to employ it in the extraction of teeth, and it has been of some service, but its application in the mouth is difficult; it is rather painful, very much so, in fact, when there is a case of pulp exposure, and as we said above, refrigeration by ether acts little or not at all upon inflamed tissues, a condition often found in the extraction of teeth. Moreover, anæsthesia obtained by this means is at best rather superficial, so that in the majority of cases it gives only insufficient results, often not compensating for the pain produced by the refrigeration itself; and in conclusion the ether vapor is irritating to the bronchial tubes.

Richardson's apparatus has given good results in the extraction of deciduous teeth and those that are loose, but it is advantageously replaced to-day by divers refrigerating agents which we are about to study.

Atomization of ether is usually made in the mouth around the tooth, which is to be taken out. M. Hénocque and Fredet in 1866 conceived the idea of no longer acting upon the ends of the nerves, but instead upon the nerve centers; and they proposed in order to extract teeth, to direct the atomized ether upon the region around and underneath the auditory duct. In three minutes they obtained "a sufficient anæsthesia to permit the extraction of inferior and also superior maxillaries. This process has been employed in a great number of dental operations at the consultations in the Lariboisière and Beaujon hospitals." M. Hénocque mentions this fact in an article on chloride of ethyl where he proposes its use in probing the auricular region. It is relying on the same principle when one sprays the cheek under circumstances where it is impossible to get at the tooth itself. We will return to this point a little later.

Many substances have been proposed to replace ether. Delcomenète, of Nancy, used sulphuret of carbon, atomized; but this was abandoned because as M. Dujardun-Beaumetz said, "this body, thanks to its extreme volatility can produce refrigeration of the tissues, but this refrigeration is so rapidly followed by intense redness, that sulphuret of carbon ought to be considered not as a local anæsthetic, but on the contrary as an irritant of an order far superior to a sinapism.

The same cannot be said of bromide of ethyl, praised abroad by Lewis, and in France by Terrillon, as a local anæsthetic. It produces anæsthesia more rapidly than ether and its vapor is neither inflaming nor irritating to the bronchial tubes.

Kanonikoff and Pliouchkine proposed *canadol*, a hydro-carburet distilled in American naphtha. This produces a lowering of temperature of from 20° to 10°; anæsthesia is complete in sixty seconds. *Canadol* has the advantage of moderate cost.

Ether has been associated with various substances. Among others this formula is given by Richardson:

Phenic acid	0 gr. 25.
Ether	25.

To be atomized.

With this mixture cutaneous anæsthesia is obtained before cold, there is no pain, but it is necessary to guard against too much phenic acid being absorbed by the wound.

Lesser, of Leipsic, conceived the idea of utilizing by a different sort of atomization the refigeration caused by ether. Instead of cooling the skin directly, he took a metal which was a good conductor of heat, applied it to the skin and cooled that. For this purpose he used nickel boxes of various forms, having convex and concave surfaces in order that they might be applied to any region. Through these boxes, three-fourths full of ether, he made a current of air pass which vaporized the liquid, cooling the metal and anæsthetizing the integument. One could by this process operate on ingrowing nails, amputate fingers or toes, remove tonsils, and especially extract teeth.

Lesser's apparatus which recalls, for the extraction of teeth, the apparatus used by George with refrigerating mixtures, does not seem very practical to us, and in fact its complication has hindered its general use.

In 1884 M. Debove preserved for the benefit of the Hospital Medical Society, the results he had obtained in the treatment of certain stubborn cases of neuralgia by chloride of methyl. This body is used in a liquid state confined in metallic bottles of a special sort furnished with screw faucets. It comes out atomized, producing an intense cold. Projected upon the skin it covers it rapidly with a frosty coating, and if the action is continued it produces a scar.

Chloride of methyl by the intense refrigeration that it produces anæsthetizes the skin; a violent reaction follows the period of anæsthesia; it is this reaction which acts in a special manner on the terminals of the nerves which M. Debove utilized in the treatment of neuralgia, and especially sciatica. But before him Lailler, and afterward M. LeDentu, had employed chloride of methyl as a local anæsthetic. However, the difficulty of regulating its employment and the dangers resulting from the intensity of its action, had hindered its usage when the process of *stypage* which is owed to M. Bailly, gave a little reaction in favor of this agent.

Meanwhile as soon as M. Debove's researches were published, M. M. Ronnet and Dubois tried to utilize the action of chloride of methyl in dental surgery, and to this end made experiments in the clinics of the Dental School at Paris; but beside the inherent faults of its action on the tissues, its use was almost impracticable in the mouth because of the siphon-like apparatus which held it, and moreover its action on the skin of the face was liable to cause serious inconvenience, owing to the dark discoloration produced by the antomization if the latter was applied a little too long.

In 1888 M. Bailly, of Chambly (Oise) communicated to the Academy of Medicine a modification of the mode of employing chloride of methyl. Instead of projecting it upon the skin he had it applied upon a pad formed of two layers of cotton and one of silk wadding, the whole held in place by wooden nippers. This instrument its author named *stype:* hence the name of the operation *stypage.* After having received the chloride of methyl on the pad, he rubbed this upon the skin and thus obtained the same action as with atomization, but in a more steady manner and one which permitted a more satisfactory grading of intensity. By this process one could treat the face which had not been possible with the siphon. By holding the wad in place for four or five seconds the skin whitens and hardens, and anæsthesia is obtained. One can then make painlessly, punctures and incisions. If blood flows it is only necessary to place between the skin and the wad some goldbeater's skin which does not hinder the anæsthetic action.

It is necessary to take care to dry the locality upon which the pad is to be placed, in order that no particles of ice may form, and that there should be no adherence between the silk wadding and the skin. If one is going to operate on a mucous lining, that of the mouth for instance, one should take care to place a piece of fine silk stuff between the pad and the surface of the skin. The smarting sensation is more keen than the ether, and the pain following the operation is a little more prolonged.

Instead of receiving the chloride of methyl upon the pad it may be received in D'Arsonval's thermo-isolator where it is kept liquid a long time and one then dips the *stype* in the liquid chloride of methyl.

In 1886 M. Galippe suggested a means of using liquid chloride of methyl by putting it into ether; one obtained thus a veritable solution whose temperature varied between 40° and 45°.

"The rewarming of the liquid is accomplished with comparative slowness since it requires two hours and a half to return to 0°.

"Chloride of methyl in etherized solution has no caustic properties; it can be applied in the most limited space either by means of a brush or by a wool pad.

"It produces upon the skin sufficient anæsthesia for the performance of superficial operations.

"Applied upon the gums it permits the extraction of teeth or of roots, either entirely without pain or making it very slight."

This latter point is not exactly true, especially in a case where the tooth to be taken out is surrounded by inflammation. M. Galippe says he has but rarely seen any ill effects from its use upon the membrane, and when such are produced they are very slight. Ultimately our confrère modified his process. He no longer employs the chloride of methel in an etherized solution, but contents himself by putting it in a glass where it remains liquid a sufficient time; it is the process which we described a moment ago for *stypage*.

M. Hénocque in a communication to the society of biology, advised producing anæsthesia by the mediate action of refrigeration upon the face, along the branches of the superior or inferior maxillary, when one wished to act directly on the interior of the mouth upon the ends of the nerves. It is the same advice which he gave concerning the application of atomized ether and which we mentioned above.

What we said about the atomizing of ether is equally applicable to chloride of methyl. We possess to-day in the latter substance, and above all in *cøryl*, refrigerating agents of at least as great efficiency as ether and much more easy to use as we shall soon learn.

Before closing this historical record of local anæsthesia, we ought to say a few words concerning the experiments made with electricity; an agent of which we have not yet spoken in order not to interrupt the consideration of refrigerants.

As for electricity it is to dentists that we owe the greater portion of the efforts made to abolish pain by its use in surgical operations; nevertheless we ought to say that the results are far from being as satisfactory as the first experiments led one to hope.

About 1856 a dentist in Philadelphia, J. B. Francis, sought to obtain anæsthesia for the extraction of teeth by means of electricity. For the purpose he used the Faradic current, the negative pole was fixed upon the forceps, and the positive pole held in the hand of the patient. He used a feeble current.

He made known the results obtained to the committee of the Franklin Institute, who made a favorable report, and this agent became much used in America. W. S. Wilkinson said that, having extracted from 400 to 500 teeth by this means, he found that 95 out of 100 operations were painless. C. A. Harris and P. H. Austen testified to abolishing pain in nine cases out of ten. They said, however, that the forceps must not sink deeply into the gum, because then the pain would not be sensibly diminished.

This restriction causes one to believe that in the cases where the anæsthesia was effective, the teeth did not offer much resistance.

Many Europeans made experiments with no better results.

Rottenstein, among others, gave himself up to efforts to obtain anæsthesia by electricity, but he obtained only unsatisfactory results, whether the current was inductive or continuous. If some patients testified to suffering little or no pain during the extraction of a tooth, others complained of suffering greatly. In short, electricity gave very variable results; sometimes diminishing the pain, probably in cases where a tooth offered little resistance, but often aggravating it in a remarkable manner. Moreover, even in America, in spite of a passing infatuation, the dentists were not slow to give it up. It had been completely forgotten; but the time came when it was considered anew how electricity could be used to obtain local anæsthesia. We will speak of this again when we give our attention to anæsthesia by cocaine.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

Regular meeting, December 5, 1893, Dr. J. W. Wassall, President, in the chair.

Dr. H. H. Wilson read a paper entitled, "Disinfectants."

Dr. P. J. Kester was called upon to open the discussion. He said: It has always seemed to me that a great deal of time is spent in the discussion of the relative terms disinfectant and deodorant, etc., and the definition given by the essayist, seems to me, to cover the ground. I do not know that I can give the exact words of the essayist, but a disinfectant is an agent capable of destroying infectious material. There ought not to be any question as to what it is. I have not lost faith in drugs particularly, yet I believe the matter of antisepsis, disinfection, etc., depends rather on conditions than upon the substances themselves. I believe it does not depend so much upon what you use as how you use it. It seems to me our time could be more profitably spent in preventing the infection of root canals in teeth rather than in curing them after they have become infected. Of course, we have to take things as we find them, and we do find roots of teeth that are infected. The way in which this is done has more to do with our ultimate success than the substance that is used. If a man had a cesspool to disinfect, the first thing he would naturally do would be to empty it, if possible, get it as nearly clean of its contents as may be, and then select his agent. If he got it absolutely clean and washed it out with pure water he would then have accomplished his object. So with the teeth. If the contents of an infected tooth be removed, then one of a number of disinfectants may be used. We are all inclined to be somewhat fogyish, perhaps, in regard to the materials and substances which we use. I know gentlemen, some of them present to-night, who have used carbolic acid for twenty and twenty-five years, and they still continue to use it. I am not here to say that the results they have gained are not as good as those who have used other substances. The experiments of Dr. Black which were made several years ago, and which I had the pleasure of witnessing and assisting in, showed that the oil of cassia was one of the best among the ordinary substances that we use. It has been suggested that the oil of cassia is irritating. Well, it is in many cases, but it may be used in a very small per cent. If I rightly remember, a solution of 1 in 800 was sufficient to destroy microörganisms, or at least keep them from being produced. With the introduction of bichloride of mercury, we supposed we had found that which was going to be the great thing, but it was soon known that the bichloride of mercury in any strength in a tooth in the presence of albumen was absolutely useless. As the essayist has said, carbolic acid, in the strength that it can be mixed with water, is also useless as a disinfectant. Carbolic acid up to eight per cent is said by those who have made experiments, not to destroy microbes or their spores.

The new substance suggested by the essayist, lysol, I have not had the pleasure of using, neither have I tried the kalium-natrium, recommended by Dr. Schreier, of Vienna; but I am satisfied that almost any gentleman present who can introduce a probe, where it is necessary to carry a fine substance, can cleanse the canal almost as easily before the compound has been introduced as afterward.

I think this matter of disinfection is very important to us, and especially as regards our instruments. The disinfection of an instrument is one of the very necessary things to do. I do not know that it would be of interest to you to dwell on this because you all know it as well as I do; but the suggestion as to how this may be done seems to be very simple. If you want to disinfect an instrument, the first thing to do is to get it clean; if you have it surgically clean, then you have disinfected it completely. If you have it simply clean in the ordinary sense of the word, then it may be dipped in any of the ordinary antiseptics, although the antiseptic need not necessarily be a disinfectant. Any one of the antiseptics may be used and the instrument dipped into it, and then it is rendered aseptic. I use principally the oil of cassia after having cleansed my instrument. I do not think much of the bichloride of mercury solution for the reasons named in the paper; neither do I place much confidence in the plan of dipping or laying instruments in boiling water. Water cannot be made hot enough in an ordinary open vessel to destroy microbes and their ptomaines. Demonstrations have been made which have proved this beyond a doubt.

I do not know that I have anything more to say on the subject, except to commend that part of the paper which suggested that it is a part of the duty of every practitioner of dentistry to try new remedies as they come out. There is no need to be careless or reckless; still I think we ought to inform ourselves clinically of the various substances which are brought to our notice from time to time.

Dr. A. W. Harlan was called for. He said: The question of disinfection and disinfectants is one that every dentist must necessarily be interested in. I do not know whether I am more interested in that than a great many other subjects. I heard a portion of the paper which pleased me very much, and one of the thoughts that struck me in connection with the disinfection of instruments in the dental office was this: that it does not matter if you do boil instruments, if you wipe them off with an unsterilized towel or napkin, they are in the same condition they were before they were boiled. So the thing to do, when you disinfect a pair of forceps, or a pair of pliers, or a smooth broach, an excavator or scaler, is to have the instruments dried in a way that will prevent their being infected before you use them, and you can dry them with heated air, or you can disinfect them and place them in a solution and put them into some kind of a receptacle from which the air is excluded and let them dry with the disinfectant on the surface, and if the disinfectant does not smell, so much the better. If it does not spoil the instrument, it is still better.

I have used lysol, and used it in the following manner: I have a sixteen ounce beaker, into which I place four ounces of lysol, and fill it with water, and from that sixteen ounce beaker I pour an ounce of the solution that is made into an eight ounce beaker, and that is about eight inches high; so I fill that with more water, and after the instruments are cleaned in boiling water, then they are stood in the eight ounce beaker, and they are removed from that into an aseptic pan and allowed to dry. Then I have got sterilized instruments. When I want to use them I know that a towel, napkin, a piece of chamois skin, or absorbent cotton, or something else that may have been exposed to sources of infection, has never come in contact with them. Probably a good many instruments used by dentists do not need anything more than to be cleaned in boiling water. It is true, boiling water will not disinfect all sources of infection. The principal object is therefore gained in some such manner as I have stated.

The method of Arkovy is to be tried, and I believe that it is the duty of every practicing, progressive dentist, as the essayist has said, to try in reason the different new methods of disinfection.

I did not hear the essayist's definition of disinfection exactly, but there are two kinds of disinfection. In one instance, I should define a disinfectant to be a substance that would destroy the infectious power of infectious material, and the chemical disinfectant would be one which is perfectly familiar to you all in the books, that will break up the compound and make a new and harmless one, or two harmless ones, or three, according to the substance to be broken up. I do not believe in disinfectants that mask odors, and I do not use them. If I wanted to disinfect a barrel of swill, I would not pour something on it that would substitute its own smell for the contents of the swill barrel, and I think I should try to do what Dr. Kester suggested—I would empty the barrel if I could, and if it was the barrel I wanted to disinfect, after I had diluted the infectious material as much as I could, I would use a disinfectant to permeate it, to render it sweet and clean. That is one of the things you try to do with pulpless teeth. It is not all pulpless teeth that are infected; a great many of them, where the pulps die, are not infected at all, for the simple reason that the apices of the roots are covered over by a membrane or an encystment. These teeth you can fill the roots of without any disinfectant; but the only way to discover that is to keep the teeth dry when you drill into them. If you bore into them without putting on the rubber dam, or keeping them dry, you do not know when they are dry; therefore I still make a plea for the rubber dam when you are going to explore a pulpless tooth, whether it is a cavity or not that you are going to drill into. It is matter of more importance to dentists, in some respects, to disinfect their instruments than it is to disinfect the territory that they work on.

With reference to oil of cassia, I do not use it myself, unless I combine something else with it in a tooth. I would rather dilute it with some less irritating agent. We know perfectly well that the oil of wintergreen is absolutely uselesss as a disinfectant, but when it is combined with oil of cassia the combined odor it pleasant. You can dissolve nine minims of oil of cassia in sixteen ounces of water, you can afterward dilute that and make it one to 800, or one to 600, or what you want. You can make it one to 3,000 or 10,000, and Koch says one to sixty-eight thousand has effectually destroyed anthrax. Personally, I prefer agents for disinfection that have no odor themselves. How many of these agents have we? Bichloride of mercury has no odor, but the only way you can render it effective is to add to it either hydrochloric acid, tartaric acid, or carbolic acid. Those are the only three agents that are known to chemistry that will prevent the precipitation of albumen when such a solution is brought in contact with it. There may be some others discovered, but up to the present time these are the only ones positively known. Probably the trichloride of iron is a much better disinfectant than any of the agents mentioned, but it is a substance that we cannot use very well, and so there it no use in considering it. You can use it in the posterior teeth, but who is it that wants to bleach iodine stains from the teeth when it is broken up and the iodine is liberated? None of us do. What is the use of an agent that you have afterward to spend as much time or more in getting rid of the effects of it, when you can use something better? I believe you can treat every pulpless tooth in the mouth satisfactorily with an emulsion of fluo-silicate alone (saturated solution). It is odorless and it is almost absolutely tasteless. You can sterilize any instrument you want to use about the mouth or antrum or root of a tooth with it. Sodium fluoride it is sometimes called. I think you can treat every case of antral disease with boro-glycerine and water that is not dependent on new growths. I have treated a good many such cases and cured them with it alone. On the other hand, I have used nothing but sulphate of zinc, but then I could not treat all cases with sulphate of zinc, because it does not possess all the necessary properties, but the combination of boro-glycerine, which is chemically known, renders it an agent that is capable of disinfection of any instrument that you use. There is no danger of staining the teeth, of poisoning the patient, of anything being stored up in a reservoir somewhere and having to have your patient antidoted.

It is not necessary for dentists to use thirty or forty remedies. They ought to have them on hand in case it becomes necessary for them to use them. Show me a man that always disinfects the parts or part he treats, and uses reasonably good sense in disinfecting around the roots of teeth, and does not put a disinfectant in his root fillings, and you will find that he is pretty successful as a practitioner of dentistry.

Dr. W. B. AMES: How long is it necessary to keep the instruments in the solution of fluo-silicate?

Dr. HARLAN: They will be completely disinfected in ten minutes.

Dr. AMES: How long would you consider it necessary?

Dr. HARLAN: I cannot state the exact time, but it is not necessary to keep them long. Out of 150 attempts to cultivate microörganisms, after placing the instruments used in cavities, roots, and between the teeth, alveolar processes, etc., the work was abandoned, because they could not get a growth from the instruments. By leaving the instruments in a saturated solution for ten minutes, complete disinfection is effected.

Dr. AMES: You do not know whether immersing the instruments for a few seconds would accomplish the purpose of disinfection or not?

Dr. HARLAN: I do not know; but a number of experimenters say that sodium fluo-silicate will accomplish almost instantaneous disinfection. As I have previously remarked, there were one hundred and fifty attempts made in a bacteriological laboratory in Chicago with instruments that had been purposely introduced into teeth, between the gums of the teeth and all around the mouth, and they did not get a single growth or culture. That is the reason why it is a good disinfectant.

Dr. J. E. Hinkins read a paper on "Bleaching Teeth," in connection with which several experiments were made.

Dr. Fritz Huxmann, who was appointed to open the discussion, was absent, and the chair called on Dr. Harlan to do so.

Dr. A. W. HARLAN: Mr. President, I would rather disappoint the unanimous wish of the society to open this discussion.

The only point that I wish to refer to particularly is the one with reference to the very black eye that tannic acid received. I just simply make the following statement, that tannin is one of the few substances that you can make a glyceride with. If you use a saturated solution of tannin in glycerine, you do not have tannic acid. You have the acidi tannici glycerite, which is not capable of being broken up by the presence of iron in the blood; therefore that objection falls to the ground. I do not know whether Dr. Hinkins was aware of that or not; perhaps he was and did not think of it. If you use tannic acid in water, I grant you the results will follow as he has stated; but if you use a saturated solution, the results do not follow.

With reference to oxalic acid as a bleaching agent, it is an excellent thing. There is no doubt about that. All the books from 1830 up to the present time have stated that oxalic acid was one of *the* agents to be used; but while it is a good bleacher, it fails to be a permanent bleacher after a time, for the reasons that were pointed out by the essayist. You cannot use any of the cements with it. The method that is as old as any man in the room probably—Labarraque's solution of chlorinate of soda, treated afterward with an alkaline solution, and dried, is probably the simplest bleaching process that we have that offers the greatest probability of permanent success. It is not a success to bleach a tooth and have it discolored in eighteen months or two years. I saw a lady the other day whose four incisors were bleached by me in 1879 by this process just mentioned, and they still retain their color. Now, with a tooth that is of reasonably good structure after you have bleached it, if you afterward wash out the insoluble compounds that are formed, then introduce your cement or filling, whatever it may be, you do not have the likelihood of recurrence. To whiten is not to bleach; to destroy chemically and make a new compound is to bleach. The trouble with nearly all the bleaching processes is that they whiten. That is what oxalic acid does. Afterward the color returns because it is not destroyed chemically. This is a question that has engaged the attention of chemists in connection with bleaching of bone, ivory, and fabrics for—I won't say centuries, because chemistry is not centuries old, but in all of the works of Muir and others and the galaxy of writers that have produced articles on bleaching in Watt's Dictionary of Chemistry, you will find the principle I have stated, which is not new to me. I simply learned it by reading. If you do not absolutely change and make a new resultant compound, you do not succeed in bleaching. The whole question of the bleaching of a tooth depends on accomplishing that. Cyanide of potassium is a good bleacher, that is, it is a good whitener. The chlorine methods in general are good whiteners, but unless you afterward wash and rewash, and wash again, until you get rid of every bit of the sediment, so to speak, you will have a discolored tooth again. I think, without any appearance of egotism, that I can refer you to a paper that I published myself on the question of bleaching teeth, which was based on strictly chemical principles, read before the combined New England dental societies in October, 1890, that goes over the whole subject. It did not include the oxalic process, nor the sulphurous acid process, for the reason that over twenty-five or thirty-five years ago these methods had to be abandoned because it was found that a tooth turned black, brown or yellow again, whatever the color was formerly; and if Dr. Hinkins will simply get rid of the substance that is whitened with oxalic acid, then he will have a process that none of us have discovered yet.

Dr. Wilson: I would like to ask if any one has tried pyrozone, recently recommended for bleaching?

Dr. W. W. Curtis: I tried it in one case in which the whole tooth was very black, there being a putrescent pulp. I removed the gold filling. After drying the tooth and thoroughly disinfecting it, I tried pyrozone, and after two treatments it was throughly bleached.

Dr. Wassall: What per cent solution?

Dr. Curtis: Twenty-five per cent. I have since tried it in one other case and that was equally successful.

Dr. Wilson: How long is it since you first tried it?

Dr. Curtis: About three months.

Dr. Wilson: And it still remains bleached?

Dr. Curtis: Yes. I lined the tooth with cement afterward and filled it with gold.

Dr. Hinkins (closing the discussion): I am sorry that Dr. Harlan has left the room. The solution of tannin was the same as he spoke of, and I got exactly the same results as I obtained here this evening, but I forgot to put it in my valise. I do not use cements in the lining of teeth, where I have bleached. The doctor says it is not a chemical reaction. I beg to differ with him. It is. The white precipitate is the oxalate of calcium. In the use of chloride of aluminum there is not chemical reaction and if there should be a reaction it would produce calcium chloride which is soluble and the strength of the tooth would be impaired. I went to the professor of chemistry in the Northwestern University, and he said they were chemical reactions. As I said in my paper, where I have lined the cavities with cement they have not been satisfactory. They would discolor. But where I did not line with cement and used gold the results were satisfactory. Of twenty-seven cases which I have treated by this method, seventeen have been perfectly successful. Three of them that I bleached and lined with oxychloride were not a success. The other seven cases I have lost track of.

Dr. CROUSE: What did you fill the end of the root with?

Dr. HINKINS: Gutta-percha, as stated in the paper. I recommend that after a tooth has been bleached, it should be washed out with water of ammonia, and then if you fill with gold you have no further trouble. I showed Dr. Cook a few cases the other day that I had bleached, and the color was just as good as when I first bleached them.

ODONTOGRAPHIC SOCIETY.

The sixth annual dinner of this society was held at the Tremont House, January 8th, 1894. The following was the programme:

1. Introduction by the President, Dr. F. H. Zinn. 2. Our society, past and future, Dr. R. B. Tuller. 3. The relation of the professions, Hon. C. Porter Johnson. 4. Originals poems, Dr. C. N. Johnson. 5. Essay, Dr. E. H. Angle, "The Evolution of Mechanical Principles in the Treatment of Fractures of the Maxillæ."

[P.S.—We hope to publish Dr. Angle's paper in a future issue of the DENTAL REVIEW.]

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

ASSOCIATE EDITORS:

T. L. GILMER, M. D., D. D. S. GEO. J. DENNIS, M. D., D. D. S.

DR. HARLAN RETIRES FROM THE EDITORSHIP.

With the December number of the DENTAL REVIEW, the writer's connection with it ceased. He has disposed of his interest in it to the publisher, and in closing this connection he desires to thank every contributor, wherever located, for their friendly coöperation in placing this journal among those foremost in this country. It is with no small degree of pride that he reverts to the fact that, during the seven years of its existence, so many men have made their first bow to the public through the pages of this publication. Of those whose contributions have been often quoted and of much value to it, are those of his immediate successor, Dr. C. N. Johnson—who now fills the editorial chair.

It is unnecessary to state to the readers of the DENTAL REVIEW that he is a graceful and fluent writer, because they are already conversant with this fact. The present editor—beg pardon, ex-editor—in severing his connection with the journal, bespeaks for his successor the same generous and hearty coöperation in the presentation of original papers, reports of societies and other matters that have been accorded to him.

A. W. HARLAN.

TO THE READERS OF THE DENTAL REVIEW.

As stated in the foregoing, the editorship of this journal changes with the present issue. Dr. Harlan in retiring, carries with him the confidence and respect of every one connected with the publication. He it was who first conceived the idea of the DENTAL REVIEW, and it was his genius and ability which directed affairs to a successful issue. No other man in the profession could have accomplished what he has for dental literature in Chicago. Through the medium of the DENTAL REVIEW he has directed the attention of the profession to this point, and has developed a desire among a large and growing class of contributors to add something of value to the periodical literature of dentistry. His accomplishments in this connection, from the inception of the journal to the present time, will live for long as a tribute to his intelligence, and as a monument to his unlimited capacity for work. His successor, in taking up the pen where he has laid it down, desires to express to him his sincere thanks for favors shown him in the past. He wishes him every good thing in life, every blessing which a just beneficence may see fit to shower upon the human kind. He was just about to say that he wished him prosperity, but that were needless, for a man constituted like Dr. A. W. Harlan cannot be anything else than prosperous. He does wish him happiness.

The new editor in approaching the realm of dental literature, where the mighty god—he had nearly written petty god—of adverse criticism stalks with eagle eye upon the faults and frailties of a common humanity, does so with fear and trembling. This because he is so terribly aware of his limitations. He knows his shortcomings as well as any, and the only recommendation he has to offer is an honest effort to do the best that in him lies. If that best proves none too good, he will at least have the solace of knowing that his kite was not sent higher than his length of string. He bespeaks in advance the consideration of readers, the coöperation of contributors, and the support and sympathy of everybody. He does *not* ask for charity.

He has much pleasure in calling especial attention to his associate editors. Two such men as Drs. Thos. L. Gilmer, and Geo. J. Dennis are a credit to any publication. The editor takes much pride, and feels a sense of personal satisfaction and gratification in having associated with him these gentlemen.

As for the conduct of the DENTAL REVIEW in the future—well, the future must speak for itself.

C. N. JOHNSON.

DENTAL COLLEGES.

On glancing over the published transactions of certain State Dental Associations recently, it was noted, that hardly a year had passed, but that some reference was made at the meetings of these associations to the work of the dental Colleges. These references were not usually of the most complimentary nature; in fact, the majority of them were criticisms, severe and malignant, resembling the diatribes of one political party against another. At one time the subject of the criticism was that of preliminary education; at another time it was the looseness in regard to advertising; or the courses of study were attacked; occasionally the character and qualifications of the instructors in charge were called in question.

That our system of dental education is faulty no one familiar with the subject will deny; that our colleges need improvement in all the points mentioned and more, those most intimately connected with these institutions freely admit; but are those who criticize most severely entirely free from blame? Have they done what they could in their respective spheres to raise the standard for which they call so loudly?

Institutions of learning of whatever character, are seldom far in advance of the public desire in the matter of education. Education is as much regulated by the laws of supply and demand, as any ordinary commercial article, and colleges are, and must necessarily be, regulated in their entrance examinations, their courses of study and final examinations, by these same laws, and they cannot offer advanced courses of study unless there are those who are willing to accept these courses when offered. As an illustration of this principle we may cite the comparatively high standing of our eastern colleges of literature and science, with our western colleges, which until within recent years have not been able to offer advanced courses of instructions for the simple reason that the demand was lacking. The elevating force must come from without as well as from within. Advanced instruction must be the result of the public wish, not expressed in words only, but in action which when properly applied will create such a demand that no college can resist. It will meet the demand or it will cease to exist.

It is time that the critics enter into a little quiet self examination, that they may determine whether they are really in earnest in this matter of higher dental education. Have they done their part in advising young men to attend only those institutions whose courses are the longest, whose examinations are the most severe, whose attainments are of the highest and whose instructors are the most upright; or are they sending them to colleges whose policy is broad and easy, and whose end is hell both to their victims and to the dental profession at large. G. J. D.

FITTING BANDS TO ROOTS.

The increasing demand for a legitimate employment of crown and bridge work as a means of substitution where teeth have been lost, calls for the closest attention to all of the details connected with the work. The perfect fitting of bands to roots is one of the most difficult and important steps in the process of constructing crowns. Nature sometimes seems to tolerate bands whose main feature of distinction so far as fit is concerned is their misfit. And yet again nature often seriously rebels against bands which have been adapted to the root with the greatest care the operator could command. The lesson is, that in doing the very best we can we are doing nothing too well, and a careful study of each case under treatment is necessary to ensure favorable results. Usually the removal of the enamel around the neck of the tooth will simplify the operation of fitting the band, but often even then the outline of the root in its circumference is such that the greatest care must be exercised to gain a perfect fit. The constrictions on the sides of roots, such for instance as the concavity on the proximate surfaces of bicuspids, are too often overlooked. In some cases this concavity is greater toward the root than at the neck of the tooth, and this results in a space between the edge of the band and the root, even though the band may appear to fit the neck of the tooth perfectly.

Slight imperfections of this nature are probably present oftener than most crown makers imagine, and every precaution should be taken to avoid them. A good practice to follow when the crown is finally adjusted is to go around the lower margin of the band with a burnisher, or what is better where it can be used, a plugger point, and gently tap the edge of the band to the snuggest possible fit. It will sometimes be found that the extreme edge of the band will yield slightly under the force of the plugger and hug the root of the tooth a hair's breadth closer, even when it had been supposed that the best possible fit had previously been obtained. The gain of even the thickness of a piece of note paper in the close adaptation of a band to a root may mean much in the final outcome of the operation.

Dentists and Jury Service.

A pertinent question for the profession to consider is the one relating to jury service. Ought dentists, by virtue of the nature of their calling, to be exempt from jury duty? This question has been asked many times before, but it recently received an answer from Judge Sherwood, at Jefferson City, Mo., with which we cannot agree. Reference to the December issue of the Dental Review, page 1002, will disclose the learned gentleman's witty remarks in handing down his decision that dentists are not exempt from jury service. We have no reflection to cast on the judge's sincerity of opinion, and we are perfectly willing to admit that a great many very excellent people hold the same ideas that he does. But we honestly believe those opinions are wrong. An intimation that dentistry is little else than a trade might have been pardonable a quarter of a century ago, though even then there were men practicing dentistry who were as learned and cultured, and whose labors were as beneficial to humanity as the best men in any other calling.

But the true situation to-day is this, that dentistry as a calling and a science has advanced so rapidly in recent years that the public—and even the learned judges—have not been able to follow its advancement sufficiently to make them realize its importance in the community. Dentistry is doing things for humanity to-day that never have been done before, and doing them in a way that no other profession ever would or could do. Dentistry is almost unique as a science. It is filling a niche in human activities for the relief of human suffering that few realize who are not intimately associated with it.

And the kernel of the nut in this instance is, that in the practice of dentistry along the most modern and scientific lines, it is impossible for the practitioner to drop his work at any stated time and go to attend jury service or do anything else which the law may abitrarily demand, without seriously jeopardizing his patient's welfare and adding immensely to the sum of human suffering. A great many of the diseases of the mouth calling for surgical or other treatment are now falling into the hands of dentists, and this not on account of any unseemly usurpation on the part of the dentist, but on account of the magnanimous and just support and endorsement of the medical profession. Physicians are realizing more every day that there are many lesions of the oral cavity that are better treated in a dental office than elsewhere, and progressive dentists are doing much for humanity in this line.

But even if this were not true, and dentists were never called upon to treat surgical cases in any form, the nature of their routine work is such that it argues against compulsory jury service. No dentist with anything like a full practice can stop his work at a stated time set for him by some one else, without discommoding his patients seriously. When a patient applies for dental services it often requires several weeks to complete the work. Teeth require to be wedged apart previous to filling, pulps sometimes need to be destroyed, putrescent pulp canals must be treated, and a dozen and one preparatory processes must be gone through before the work can be completed. An enforced interruption at any stage of the work may mean needless suffering and inconvenience to the patient.

A bit of personal experience might have taught Judge Sherwood a lesson and resulted in a benefit to the profession. Supposing the learned gentleman was having a blind abscess treated by his dentist, and supposing he neglected to return for treatment at proper intervals—as judges sometimes will—until one night the tooth began to trouble him so that by morning he was suffering from a piping hot abscess. And supposing he found, on calling at the dental office with his hand supporting his swollen jaw, and his eyes bleary from suffering and loss of sleep, that his dentist was away on jury service !

Or supposing that he had been suffering for days and nights with neuralgia shooting along his jaws and up the sides of his head, and had gone to a physician repeatedly for it—as a person holding Judge Sherwood's opinion of dentistry would have done—and had got no relief, till finally he had grown nearly crazed by the suffering. Supposing at this stage a lower molar that was very useful to him in mastication began to show symptoms that it might be the cause of the difficulty, and supposing the physician then said to him: "You go to dentist So-and-so. He is the only man in town who can give you relief in a case of this kind," and after all this, supposing the judge found the only man who could give him relief away on jury service and his office deserted !

We venture to believe that after an experience of this kind the judge would not have handed down an opinion closing with the following words: "A tooth doctor is no more exempt than he who is content to be dubbed 'corn doctor.'"

A proper agitation of this question will yet, we believe, demand for dentists exemption from jury service.

How to Write.

A profession is often judged largely by the kind of literature it makes, and as practitioners of dentistry we should seek to make our literature such that it will reflect credit upon us as a profession. It is perhaps true that a scientific investigator is not always a ready writer, and yet we are inclined to the belief that the art of clearly and concisely expressing one's thoughts on paper, is largely a matter of cultivation. It has been said that a clear thinker is always a lucid writer, but we are scarcely prepared to accept this.

We have known men whose minds were well trained and who were natural thinkers—men who could express themselves clearly, definitely, and readily in conversation, but who the moment they took up the pen, began to flounder laboriously in trying to give expression to their thoughts. We know of no other acquirement in which the adage, "practice makes perfect," holds so true as in this. We have heard dentists demur and excuse themselves from writing scientific papers for journals, on account of the fact that they were unable to "dash off an article like other men." We are tempted to say that this is all nonsense. Men whose articles read smoothly do not "dash off" their work. We recently heard a suggestive remark from a writer whose articles are read with delight and appreciation by all who come in contact with them. In laying out some future work and allotting time for this and that article, he hesitated a moment, and corrugating his brow in a distressed manner, remarked to us : "Writing is so painfully slow and labored with me !" Here was a revelation ! To read that man's articles one would imagine that the sentences slipped from the end of his pen by some sort of subtle inspiration that made writing mere child's play for him. His thoughts flow along on the printed page as smoothly as a purling river rippling over shining pebbles on its journey to the sea. The ideas are clear, concise, and consecutive—there is never a word too much nor too little, and every word is in its proper place.

When we contrasted this man's work with some of the articles we see by members of the profession who are probably proficient enough as practitioners, but whose MS. is "slung together" as slouchily as the garments of a seedy tramp, we were more than ever impressed with the truth of the statement that "easy writing makes difficult reading."

It is true that some men are naturally more proficient with the pen than others, but we believe that no man of ordinary education—and all men may be possessed of that in this age—need fail of a lucid expression of his thoughts if he takes sufficient pains with his MS. The rising generation of dentists should lay this matter more to heart than they do, for it is to them that the profession must look for its literature in the future. For those who have the ambition to write for their profession, but who yet lack the facility to do so with credit to themselves, we have the advice of one of the most eminent literary men of this continent: "Practice, practice, practice."

Every article that a young man writes makes the next one so much easier for him. The first draft of a paper may be discouraging on account of mistakes and awkward phraseology, but this is not necessarily an obstacle to ultimate success. Some of our very best writers make sad havoc of their first copy. The fact is that nearly every article on any topic requiring deep thought requires to be rewritten. Concentration of the mind on the subject matter itself sometimes results in faulty construction. The effort to evolve the thought often leads to laxity in its mode of expression. When the thoughts are once summarized and on paper, it is the duty of every writer to carefully revise his work and make it read smoothly. Then as a last precaution the MS. should be placed out of sight in a pigeon-hole and allowed to rest for as long a time as is practicable, till the author has dispelled the atmosphere that "was wrapped 'round him" while he was writing it. He can then examine his article in the light of an ordinary reader and is well nigh sure to discover crudities which in the first flush of its composition had escaped him.

A single point more—out of a dozen others that might profitably be touched upon if we were writing outside of the limitations of an editorial. Study simplicity of style above all things else. The greatest literature of the world—that which has lived the longest—is that which contains the simplest modes of expression. Highflown, stilted phraseology is too often employed to cloak a scarcity of ideas, and while big words have their legitimate place in literature they were never created for the purpose of allowing immature writers the opportunity of indulging in a series of linguistic gymnastics.

DOMESTIC CORRESPONDENCE.

Letter From New York.

To the Editor of the Dental Review:

Merry Christmas—*Amicus humorii generis.*

December brings gladness of a kind that no other month does. Fifty years ago it was wholly the child's festival season, but who now is so old that he does not catch somewhat of the spirit of Christmas?

Christmas is one of the festive days that will not, ever, lose its vivacity. From its inception continuity was formed in its bud· This was a bud of promise, and year by year it is fulfilling its purpose, whatever may be the degrading tendencies on some lines to carry the remembrance into unhallowed associations. It commemorates the name that is above and beyond all other names. That this name has so long held the reverence of the millions of all races and brought into our day a charity that associates with all our eleemosynary institutions, is proof of its potency for its future good. In so much as our calling is infused with the supernatural character associated with the spirit that this name signifies, just in proportion will its virtues be elevated. The heart of our profession draws its support from this source. Behind all of our efforts to raise the standard of usefulness, must be the spirit of unselfishness and this is not found in the natural man.

We do not need a very powerful search light turned on to evidence the tendency of our day. No man can cure this tendency. With but a few will it ever be that they will leave all and follow after the unselfish, and have it said they died poor as "Job's turkey." The association of this last quoted phrase reminds us that some unfilled pledges are smoldering in the archives of some societies, viz.: what has become of the promises to commemorate the name of one noble man who laid himself on the altar for the good of his profession and "died game," as he often reiterated he would. That voice has reëchoed in all our gatherings for good. It will spring up and bear fruit; yes it has already. No name will live in remembrance with us longer than that of Dr. William H. Atkinson. As it is a month of cultivating gladness, it will be well to recall the names of many that have broken ranks with us during the last year, glad that they were so long with us and added so much to the common fund of our usefulness as a calling. Drs. Watts and Allport were preëminent. The First District Society's December meeting was a credit to its former reputation. There was a full attendance, and a decided interest manifested. Every one was on his good behavior. This is as it always ought to be. "Ideal Bridge work" was the subject, by Dr. M. L. Rhein, displaying a fine set of drawings for illustrating the work which is an invention of Dr. Charles Andrews, of New York, and it is as neat and unique as the doctor himself. He has won a name much above the ordinary for painstaking skill in what is termed mechanical dentistry. For many years he has been employed by practitioners who desired such service, and has distinguished himself. He did the late Dr. Atkinson's work in this line. When this ideal bridge invention is placed upon the pages of the journals it will be viewed with much interest and doubtless will receive no little practical attention. The paper was discussed by Drs. Ottolengui, C. M. Richmond, Van Wort, Gaylord, Parmley-Brown, Wardwell and Rhein. It is unfortunate that some men cannot defend their favorites without being so willing to deride those of others, calling men's efforts "tooth carpentering" and showing up "dead bone" to try and prove by it something derogatory to the invention. Such things do not emphasize favorably the case in hand. Doing this in the presence of the inventor is one thing, but another thing in his absence. This calling able men "quacks" and their efforts "nostrums," when it is far from the truth, does not show well for those that are guilty of the same purposes (clandestinely secured).

A decided hit was made by Dr. Gaylord, of Conn. He has concluded for himself that platinum stands at the head as a metal to come in contact with the soft tissues of the mouth. Every man can nail that statement to the mast as a *fact*. It is nonoxidible.

Dr. Parmley-Brown stated the fact that can be proved, that bridges of platinum, resting on the gum tissue firmly produce no irritation or foul secretion. He predicts that bridge work will ultimately settle down to the plan of resting them on the gum with slight pressure. We have seen cases sufficient enough to satisfy us that it is the most cleanly method. This reminds of another proof that carries conviction to our mind. The work, viz.: "Causeways" invented by Dr. Clowes, exhibits so clearly a condition that it calls for admiration. When we were invited to see some of this remarkable work, we expected to find a foul odor attending it, but it was not so, and the secret is this: it is built upon the gum so compactly that it shuts off the atmosphere, so there is no fermentation. I have never met cleaner mouths or so free from disagreeable odors as I found to be the fact in cases where he built these causeways very extensively upon the vacancies of some nineteen teeth. We condemn so unmercifully our fellows without a hearing, it is a marvel we do not learn some valuable lessons by experience. For instance, note the contrast of this discussion just taken place, which we have made note of, and compare it with the dealings of this same body when Dr. C. M. Richmond first introduced crown and bridge work into New York. A big change in ten years. It is cause for gratitude; it shows progress. We take a little comfort to ourselves that we were the first on the published record commending bridge work, and were called some very naughty names for saying what we did. The late Dr. James White, editor of *The Cosmos*, refused us space in which to tell the profession what we knew of its value. To-day the most vehement opposer ten years ago of Dr. Richmond's invention in the New York societies is wearing a beautifully constructed and extensive upper and under movable bridge made by Dr. Richmond two years ago. Let us now have peace and bear much fruit.

This subject may be discussed over and over, but it is the good judgment of the operator that will always decide the value of this work, and it is so with all that we attempt for our patients. Pity is it that we are so weighted down by inefficient practitioners.

The Central Northern Dental Association held its regular meeting Dec. 18, which was preceded by its dollar dinner, which was fully up to anything of a former date in excellence, and was participated in, in a very enjoyable manner by some seventy-five members and guests from New York, Philadelphia, Connecticut and Brooklyn. Dr. Ashley Faught, of Philadelphia, gave a short paper upon "Diet and its Relation to Tooth Tissue." He advocated that only by the proper assimilative process could any betterment be produced, and even by this it must bring the requisite materials that are necessary for a formative structure, that will meet the resisting needs that nature demands. Dr. Curtis, of New York, cited a case that he had been able to watch for many years. The child, while under parental care and fed upon cereals, did bring in apparently good teeth, but when arriving at an age of choosing the diet for herself the teeth were not able to stand the changed conditions and became very much deformed by caries. Dr. Bogue gave similar testimony. This question of dental pathology must always start upon the idea of having living tissue for its basis. How many recognize this, who write and talk? We smile when we hear the often repeated remark, what does all this scientific talk amount to? Just nothing; to him who thinks only of the commercial gain. When these questions face us like the one reported here, it proves how little we do know, and how much we really need to know. We do not think our present character of organization is calculated to encourage the highest order of mental effort. Valuable papers do not get a combination of minds to concentrate upon them that will stimulate the higher order of thought. How much does it add to knowledge to have a half dozen get up and tell the author what a nice paper he has presented? Able men are talking about these things, and sooner or later there will be a move toward more helpfulness.

Methods of using Speyer's Cohesion Plates were demonstrated at the Jersey meeting, and there was shown a new right angle hand piece, the invention of Dr. Stanborough. A resolution was offered at this meeting that brought out the "protectionist"; one member, was on his way from the cradle to his grave as one, and he will be—Lucky, all the way—he thinks. Jersey is all through and through protectionist. They had their big (I) on that when they got a law that bounced out all dental tramps from practicing in their State. We see that Connecticut has gone one better; they hold censorship over the practitioner's moral character. If he breaks on this line they hold the right to revoke his license. Legislation is getting things down fine.

We feel disposed to note things of interest that appear in the journals, and we do this of Dr. Sippel's article on the work of "The

Dental Congress." This article emphasizes some things which are creditable, but when he comes to call attention to hypnotism, we think he drags in not a little matter foreign to the subject. Every one has a free field for airing his views, and let him do it. We question whether it is profitable to do so at such length as he has, for it may bring up a strong temptation for some one to ask: Is there not something to be said on the other side of the question? What the doctor has said has much of truth in it, looking at it from his view of it; yet it is true that there has never been any conflict between *science* and *Christianity*, nor can there ever be. The clashing is only produced by wrong interpretation. As larger light comes in the harmony will be more apparent. We believe that the supernatural will prove ultimately to be as much —yes, even more —in harmony with science as with nature. When we have supernatural intelligence as we will have, we will know some things that many now think are unknowable. We are reminded of an incident in the late Dr. Atkinson's life ; a gentleman once sitting in his chair said, "Doctor you do not with your intelligence endorse the nonsense of the immaculate conception theory." His reply was "One is as much a miracle as the other, to my mind.'' We had rather take the teachings of the *Creator* than of the *created*. (*Self-made* men are prone to worship their Creator.)

Dr. W. S. Elliott, well known as one of our best and ablest men, has answered four hundred written questions for the privilege of practicing in Trenton, New Jersey. We have learned of a good and able man in Massachusetts that their unjust law has fallen upon, and put him under bonds not to practice. He did not feel called upon to submit to the imposition. He has got "grit," and it will be interesting to see how it will come out.

At the annual meeting of the Odontological Society, Dr. A. H. Brockway got twenty-four votes for President out of twenty-five; that settled it for another year. Before the election came off there was a growling lion in the way, but that vote sent him inside the lamb. A formidable diet for such a mild animal. "If you do, I won't play." How naughty for thirteen full-grown men in dress suits, to talk so. Think of thirteen such fellows threatening to resign because they can't elect their man.—Is it science, or selfishness ? What does it mean, is whispered all about, that Dr. A. L. Northrup's large and valuable library has been given to the *Academy of Medicine?* Is dentistry a specialty of medicine, or is it an independent profession? We find that this gift was made October, 1892. It has been kept mighty quiet, some are saying. Instead of its occupying a place of honor, it is scattered among the general collection. Is it convenient for dental reference? We say not. For no dentist can have access to the rooms after six P. M.—"open only to members after" this hour. Could this large and valuable library have been added to the admirable collection that now graces the room of the Odontological Society it would have been a precious gift, and a lasting honor to the donor. Comment is unnecessary. QUID NUNC.

P. S.—To our surprise we learn of the retirement of Prof. Harlan as editor of the REVIEW; we are not of those who say when an able man drops out—well, can we ever fill his place? Yet such ability as Prof. Harlan has exhibited as an editor, is not any too plenty. Prof. Harlan in his mental capacity as in his physical, towers into lofty proportions. The west is proud of him, as well they may be. His name is one of praise. His ability shown in connection with the congress was acknowledged on all hands. Although he is retired as an editor, he will not withdraw his favors from the columns of the literature that has monthly graced the pages of the REVIEW. It has been commonly remarked, that the REVIEW presses hard upon the *Cosmos*, as a rival. Prof. Harlan's strong personality and intellect enables him to occupy an enviable position in his profession both in this country and in Europe. Not only will our good will follow him, but we are safe in saying *"so say we all of us."*

To the Editor of the Dental Review:

DEAR SIR:—In the report of Clinic No. 4, Southern Illinois Dental Society (December number REVIEW, page 977), occurs the following: "Cohesive gold was used nearly altogether and condensed with Harris' engine mallet. The doctor made a beautiful filling, but the work of the mallet was rather slow."

The report gives the doctor the credit of placing in a tooth a beautiful contour filling, for which he deserved, and, I presume received the thanks of all those that were permitted to witness the operation.

If he could accomplish better results by malleting slowly, that was the proper thing for him to do. If more men thought of the result, and would take plenty of time for their operations, our patients would be better served, but it would be hardly just to criticise their instruments for that.

The idea that seems to be so prevalent that a pneumatic mallet is slow, appears to me to be without foundation. The Harris mallet is capable of four thousand strokes in a minute, each one a good, clear, condensing blow, and few of us can properly utilize strokes from any mallet more rapid than that.

The mallet is but little heavier than a pencil, with only a light rubber tube for connection with the pump, leaving the greatest freedom possible for movement, and literally nothing to impede the most rapid operating.

Yours truly,

E. A. Royce, D. D. S.

REVIEWS AND ABSTRACTS.

Yet Another Professional Holiday—The World's Columbian Dental Congress. By George Cunningham, Cambridge, England.

[continued from december review, page 996.]

Some members of the Odontological Society of Great Britain may be interested in the following comments on three items which, we have reason to believe, figured in the discussion of the World's Congress Auxillary circular, and led to the rescinding of the resolution of a previous meeting at which delegates had been appointed to the Congress. Firstly, as to what we may briefly characterize as the erroneous statements of America being the birthplace and home of scientific dentistry, I made inquiries in many directions; but found that very few had ever seen the circular in question, and not a single one of those who had perused this wretched and unfortunate publication, but condemned the objectionable passages in the strongest terms. Secondly, apprehension was expressed as to the two public meetings which were arranged to be held in conformity with the general rules appertaining to all the congresses. It is true the public were admitted to the gallery during the general meetings, but were absolutely excluded from the sectional meetings and the clinics. As a matter of fact, the attendance in the gallery was of the very scantiest, and consisted mainly of the relations and friends of dentists and a few dental students. Indeed, I scarcely think that the Dental Executive quite carried out the intentions of the Congress Auxiliary Executive. I certainly anticipated that the two popular evening meetings would have been devoted to the treatment and discussion of some features of dentistry from the standpoint of public interest, such as a lantern lecture on dental hygiene, or a discussion under the superintendence of the committee on the care of the teeth of the poor. As a matter of fact, neither of the evening general meetings, though well attended by the members of the Congress, were in any sense popular; but were devoted to lantern exhibits illustrating purely professional subjects which were treated in a way worthy of the Odontological Society itself. Thirdly, with regard to the Women's Branch, "The officials of the World's Columbian Dental Congress have shown the most favorable disposition toward women dentists, but the women themselves have been slow to respond," as mentioned by the Recording Secretary in her report to the meeting of the Woman's Dental Association of the United States, held during the progress of the Congress. As far as I could gather, about twenty to twenty-five women dentists attended the Congress, all of whom were members of recognized dental societies, with the exception of three foreign representatives. They contributed some papers of no uncommon interest in several sections, including one on "Mercuric Chloride as a Germicide," which showed a familiarity with the operations of bacteriological research as yet possessed by few dentists.

It is curious how such an episode as this unfortunate circular may warp one's common sense, culminating in attributing ulterior motives to even commonplace incidents. It seems that the official letter from the Odontological Society of Great Britain was returned from America unopened. Some of my friends, more or less touched with Americaphobia, seemed to think that this was a part of the wily tactics of the Congress Executive, and asked me if I could give any explanation of the fact. I confidently expressed the opinion that it was a matter entirely connected with the postal service. I therefore naturally took an early opportunity of ascertaining the true history of the returned letter. The letter was addressed to the President of the World's Columbian Dental Congress at Chicago. No such person was known, or could be found, by the postal authorities; and therefore, after a time, as is usual in such cases, the letter was returned to the sender. It was then redispatched to America, but this time addressed to the President personally, at his home address in Boston, where, of course, it duly reached him, but only a few days before the beginning of the Congress. I know that it was a matter of great regret to him, firstly, that the letter had miscarried; and secondly, that in the midst of pressure of work he had not had the opportunity of sending an official reply before the Congress.

Now to return to our "moutons," no disrespect meant, most of our friends were busily engaged on executive work or in connection with the meetings of the National Association of Dental Faculties and the National Association of Dental Examiners which were being held antecedent to the Congress. These two bodies are doing extremely good and useful work, especially in standardizing the dental education in the different States. Their existence is a practical recognition that leaving the control of higher professional education to bodies with naturally diversified State law is bad, and that such matters are of federal, or as we should say, imperial concern. It is indeed a matter on which we may congratulate ourselves that there is no necessity for analogous bodies in this country, owing to the absolute identity of the dental laws in the several parts of the United Kingdom, and the practical uniformity of the dental curriculum in all our dental educational institutions. It might, however, be worth while to consider the advisability of an occasional conference of the executive or delegates from our different dental schools to discuss how far, and in what respect, the present curriculum, framed many years ago, might be improved.

The following quotation from the proceedings of the latter of these two bodies as to the number of students during the session 1892-93 is a striking contrast to the number of students recently attending our own schools, which is so small as to give rise to the very serious question whether the increase in the number of students is proportionate to the requirements of the community. 'Session 1892-93, number of students in recognized schools: Freshmen, 1,429; Juniors, 927; Seniors, 433; Graduates, 320; Post-Graduates, 44 (one school not reported), Total, 3,153. In unrecognized schools the number of students was: Freshmen, 111; Juniors, 54; Seniors, 22; Graduates, 20." Nor does this statement quite exhaust the actual number of students, for there are probably many studying with private practitioners, who might fairly be ranked as students, especially for the purposes of comparison with the number studying in this country; since it must be remembered that in the United States it is still possible for a student to become a legally qualified practitioner without necessarily passing through a dental college. In this respect British legislation is much in advance of even the best State legislation in the United States, since it is impossible for any student of dentistry to become a legally qualified practitioner without (1) passing the preliminary examination in arts similar to that required of medical students: (2) four years spent in professional education, which includes three years practical instruction in mechanical dentistry under a registered dental practitioner, or under the direction of the superintendent of the mechanical department of a recognized dental hospital, and two years devoted to lectures and practical work, attendance being obligatory both at a medical and a dental school, before he can enter for the qualifying examination which is always conducted by one of the licensing corporations having no connection with the teaching bodies.

We had plenty of opportunity of comparing notes on this and other matters with the various practitioners who were now beginning to throng the reception rooms of the Columbian Dental Club. Our acquaintance with the American practitioners was simply increasing by leaps and bounds. The weather was hot enough to make us revel in the cooling lager, or enjoy the soothing effects of a cigar, seated in the shade, surrounded by good fellows who betrayed not the slightest trace of animosity, even in discussing our international dental differences. Yes,the Columbian Dental Club was indeed a great institution. It was very conveniently and centrally situated, and became the general headquarters of every dentist who visited Chicago, and at times even its large rooms were thronged to almost overcrowding. From early morn, one might almost say, to early morn, the Chicago dentists thus kept open house to one and all. It was not a palace like the Union League Club or the Chicago Athletic; it was not luxuriously furnished, but it was spacious, comfortably equipped, and served its temporary purpose so well that many will regret that it could not become a permanent institution. Not the least best remembered feature of the Congress to most visitors will be the pleasant days and nights spent in or around and about the Columbian Dental Club, nor will they readily forget the valuable and innumerable services of the omnipresent managerial Brophy, nor those of his colored henchman "the Commodore."

You, Mr. Editor, have well remarked that "there is the social side of a meeting, under its soothing influence, begotten largely of better knowledge, angularities get rounded off, annoyances allayed, and mutual appreciation heightened." The club contributed enormously to the development of the social side of the Congress, far more, indeed, than any amount of separate receptions and more or less formal entertainments could have done. It is to be hoped, therefore, that it is but the forerunner of a similar institution at the next dental congress, wherever that may be. Paris, 1900? Well, perhaps, but why not before? Many a time during this professional holiday, both Americans and foreigners have spontaneously remarked that the next dental congress should be in England, and why not? I frankly admit that I discouraged any such anticipation, mainly because so many British dentists regard an independent dental congress as inimical to the dental section of the International Medical Congress. Is not our policy in this regard rather contradictory, not to say inconsistent, since it is a well-known fact that as a profession we have discouraged, nay prevented, the formation of a dental section of the British Medical Association, because that would interfere with the prosperity of our independent dental association and its independent annual general meeting? As a lover of all good things, I am an advocate for both, and see no reason why we should not hold from time to time independent international congresses, such as are now held by many sections and specialties of the medical profession, while according our fullest support to all international congresses where dentistry is concerned, or is capable of playing an important part, such as the International Medical Congress or that of Hygiene and Demography.

I remember urging upon a friend, as a reason why he should give the congress his fullest support by accepting an honorary officership, that the membership was to be confined to legally qualified and reputable dentists (as defined in the code of ethics in the American and Southern Dental Association) residing in the United States, and such dentists residing in foreign countries who were certificated eligible by the honorary officers of their respective countries, to which his reply was—"Oh, yes, that all looks very well on paper, but they won't carry it out." While seated at the club one night, I received a message from the Secretary-General requesting me, in the absence of either of the foreign Secretaries, to interview a gentleman who could not talk English, but wanted to make use of the club and enroll himself as a member of the Congress. He described himself as a dentist practicing in Belgium, and on my asking him if he had the necessary certificate as to his eligibility from the honorary officers in Belgium, he said that he had not, and that he had never heard of the regulation, as he had been in Chicago since the opening of the Exhibition. On his learning that none of the officers representing Belgium were present, he very kindly volunteered to give an address on behalf of Belgium at the opening ceremony. I naturally inquired how it was that he, a dentist, had been able to be so long in Chicago, when he informed me that he had charge of an exhibit which was creating great interest at the World's Fair, and exhibited quite a bundle of cards of many eminent American Practitioners, who he said had expressed great admiration of his exhibit. As I knew that several of the gentlemen, whose cards he produced, did not talk French and he did not talk English, I did not attach much importance to that. Further inquiries elicited the fact that he had also charge of a perfumery stall, that he belonged to a family of seventeen, all dentists, and that he was the author of a "Guide Pratique d'Hygiene and d'Art Dentaires," a copy of which he kindly presented to me. I need scarcely say that his name and address was prominent on the title page, followed by the following astounding catalogue of his qualifications:—"Dentiste agréé de différentes écoles de la province de Liége, Spa, Ostende, etc.; Plusieurs fois brevet, membre de jury hors concours; Médailles d'or et diplomes d' honneur aux Expositions d'Amsterdam, 1883; Londres, 1884; Ostende, 1887; Nice et Tunis, 1888; Paris, 1889; et Liége, 1890; Récompensé par le Gouvernement Belge et la ville de Liége." This tissue of self-fabricated honors was followed by the announcement that the manuscript of this work had been awarded a prize in different exhibitions. A glance at the preface showed that his previous pamphlet on the same subject had met with a reception at the hands of the public which surpassed all his fondest hopes—40,000 copies had been disposed of (en levés) in a few months—and that he made no pretense to science, but desired simply to let the public profit by the fruits of his own experience and practical notions, which study has enabled him to acquire from the most authoritative sources. I need scarcely say that the application of this philanthropist was promptly rejected.

Notwithstanding this rebuff he managed to secure, in some way or other, about the second or third day of the Congress, a ticket of membership as a foreign member. He was, however, soon after recognized; his ticket of membership was canceled, and his magic button promptly confiscated.

It is therefore worth noting that the executive of the World's Columbian Dental Congress honestly endeavored to carry out the ethical restrictions it had imposed as to membership; indeed so far as I know, it is the first time on record in which any congress, either medical or dental, has endeavored to rigorously exact any such ethical qualification as to membership. Of course it is almost impossible, in the pressure of business, especially during the earlier days, to absolutely prevent some fraudulent registrations. During the course of the congress it transpired that some six persons, four from the United States and two from abroad, who had succeeded in registering as members, were afterward found to be ineligible; their membership was therefore annulled and their subscriptions returned. Before the final authoritative list of members is published, it is the intention of the Executive Committee to further overhaul the list, and return the fees of those whose membership may be canceled. There can be no doubt that many a quack and advertising practitioner, especially from foreign countries, is admitted without cavil to these large congresses; and we would especially recommend the adoption of this practice of placing the responsibility of foreign membership on the honorary officers of their respective countries, as otherwise angels are sure to be entertained unawares.

The conjoint dental societies of Chicago gave the congress a good send-off in the shape of a reception at Kinsley's (the Whitehall Rooms of Chicago). It was indeed a splendid success, mainly owing to the number and the attractions of the ladies present, though, perhaps, I say it as should not, since I learn from a comment in the *Dental Tribune* "that England's representatives (*incog.*) did much to remove the formal frigidity of the atmosphere by starting up a few dances.''

About this time the Executive Committee requested me to undertake the duty of replying on behalf of Great Britain at the opening ceremony. Having already in conjunction with my colleagues, declined my appointment as honorary Secretary, I felt a considerable delicacy in doing so, until I was assured by the other representatives of Great Britain present that some one ought to reply on behalf of our country and that I should do it.

The World's Columbian Dental Congress was formally convened at the Hall of Washington, in the Memorial Art Palace, Chicago, Monday, August 14, 1893. The proceedings of that day were of the most auspicious character, and from that moment forward there was no doubt as to the success of the Congress; the attendance was magnificent and truly international from the unusual number of representatives from foreign lands. President Bonney, of the World's Congress Auxiliary delivered an address, which was short but to the point, welcoming us to Chicago and introducing Dr. Walker, President of the Executive Committee, who in a short, pithy, pointed speech introduced the various officers of the Congress. It must have been rather a trying introduction I thought for some of them, but it is a useful although a somewhat uncomfortable kind of ceremony. The Secretary-General, Dr. Harlan, then read the resolutions creating the Congress. For obvious reasons, although it was no speech, the speaker was hailed with a perfect storm of applause, an eloquent tribute of appreciation of an infinity of hard work. In the absence of the Hon. John Temple Graves, who was to have delivered an address, entitled "The Need of Dentistry from the Public Standpoint," the Congress found an eloquent and able substitute in the person of Dr. Crawford, of Nashville, who delivered certainly a stirring address of welcome. Both the matter and the delivery, a Britisher would say, were essentially American. He would not be quite right, because it is only one of the types of American oratory. We all try to rise to great occasions and usually fail—there was no kind of failure about this speech. But it must be admitted that, to the timid foreign representative, there is something truly appalling in hearing in stentorian tones, full of earnest conviction, "that quite seventy million hearts to-day are expressing through the orator their universal welcome to the dentists of the world." It is a sublime thought of course, but how difficult to live up to it. Then when he asked us gentlemen from the foreign countries, "to grasp his hand in imagination and feel the pulsation of the great heart of the American people, beating in unison at this very moment," I felt almost afraid, for alas! I had no prepared speech committed to memory, and the orator's eloquence made me all the more conscious of my own inadequacy. The inaugural address of the President of the Congress, as may be gathered from the abstract already published in this journal, was worthy of the great occasion; but he, perhaps, most showed his preëminent qualities for the office in the graceful speeches with which he introduced the various foreign representatives. The first on the list was Great Britain, and indeed it was a moment worth living to listen to the President's kindly remarks and the astounding reception with which they were endorsed by that vast audience. As an actor in that to me at least, ever memorable scene, I do not mind admitting that I was almost overcome. I never anticipated that under the circumstances our country's name could have met with such a reception—honestly, I really seemed to feel the pulsation of the great heart of, at any rate, the American Dentists, and I endeavored to rise to the occasion, and, according to the *Cosmos* in the following way:

[Reference, "Mr. President, Ladies and Gentlemen," p. 704 *Dental Cosmos*, September, 1893, to "these remarks," p. 705.]

That I did not fail altogether in my object is apparent from the following quotation, which I may be excused making, from an editorial in the daily edition of THE DENTAL REVIEW: "The hearty reception that was extended to Dr. Cunningham, of England, both by the chair and the audience, and the feeling response which it brought forth from our British brother, will go far toward healing any breach which may have existed between the dentists of the two countries on account of the action taken by the English societies in regard to the Congress. As Dr. Cunningham said, it was an 'accident' which he hoped would soon be forgotten. We certainly have no ill-will against the dentists of England, and we especially wish to welcome those who are with us this week. We can forget a difference of opinion as quickly as any, and as for those who sought to stay in England, we have only the words of their worthy *confrère* in his response—'they will lose more than the Congress will.'—C. N. J."

Dr. Grevers replied for Holland and the Association of Dentists of that country; Dr. Richter, for the German Association of American Graduates in Germany and the Berlin Dental Association; Dr. Zsigmondy, for Austria and Hungary; Dr. Barrié, for France, presenting a joint address to the Congress from the two dental schools of Paris and their respective Dental Associations; Dr. Portuondo, for Spain; Dr. Mela, for Italy and the Odontological Society of Italy; Dr. Caracatsanis, for Greece; Dr. Burnett, for Uruguay; Dr.

Flagg, for Paraguay; Dr. Alfred Burne, for Australia and the Dental Association of New South Wales; Dr. Roussey, for Switzerland; and Dr. Whitney, of Honolulu, and Dr. Kimball, of Shanghai, for Americans in foreign countries.

Thus ended a long, but interesting ceremony, certainly the grandest and most dignified opening dental function which I have been privileged to attend.—*The Dental Record.*

(TO BE CONTINUED.)

DISEASES AND INJURIES OF THE TEETH. Morton Smale and J. F. Colyer. London and New York: Longmann Green & Co., 1893.

This "Manual of Practical Dentistry for Students and Practitioners" is the joint work of the Dean of the dental hospital of London, and the assistant dental surgeon to Charing Cross hospital. Few on this side of the water will care to adopt the somewhat doubtful practices compiled by the authors. To be a good compiler one must have had a vast practical knowledge of the various subjects drawn upon; in addition to this a facility of making clear the meaning of the author drawn from. The chapter on opening the antrum, and the methods of treatment taken as a sample, will show the lack of fitness to compile, much less to offer such a compilation as an authority for a practitioner. The book is well printed and many of the illustrations are good. A new edition will probably bring the book to a closer touch with present knowledge on many of the subjects handled. It is bad enough to call Mr. Jo. Smith Mr. Enrico Smith; by this we mean if you quote a name call it the American System of Dentistry, not Dental Surgery.

THE STUDENTS' QUIZ SERIES. SURGERY. By B. B. Gollaudet, M. D., and C. N. Dixon-Jones, M. D. Price, cloth, $1. Philadelphia: Lea Brothers & Co.

For the use of students this series taken altogether serve a better purpose than any previous series we have ever examined. They are easy to carry, the type is good, and judgment has been exercised in the selection of matter.

GRAY'S ANATOMY, DESCRIPTIVE AND SURGICAL. Thirteenth edition, with colored plates. Edited by T. Pickering Pick. Philadelphia: Lea Brothers & Co., 1893.

We do not pretend that any one can get along without a "Gray." Go and get one—a new one—then you will not be afraid of severing the mental or any other artery, unless you desire to do so. This is a superb volume of more than 1,100 pages, still a little moss covered in relation to the development of the teeth only.

DUNGLISON'S MEDICAL DICTIONARY. Twenty-first edition. Philadelphia: Lea Brothers & Co., 1893.

We have watched the gradual enlargement of this work for a period of more than twenty years, until now it needs only the addition of new coined words from time to time to constitute it *the authority* in this country in medical science. All the later terms relating to dentistry with a few noticeable exceptions, are incorporated in this edition. A good dictionary is as necessary as a cash book to the writer, and this edition is best of all.

A PRACTICAL TREATISE ON MECHANICAL DENTISTRY. By J. Richardson, M. D., D. D. S., sixth edition, revised by Geo. W. Warren, D. D. S. Philadelphia: P. Blakiston Son & Co., 1893.

This is without doubt the best American text-book on the subject of mechanical dentistry. It is in connection with Claude Martin's work and Kingsley's Oral Deformities, one of a trio which every dentist ought to have at hand, who essays to do practical work. Dr. Warren has added much of value to this edition—much more valuable than the few minor defects we could point out, and we recommend it as a manual for practitioner as well as student.

BOOKS RECEIVED.

(The following book notices were kindly furnished by the retiring Editor.)

Transactions of the Illinois and Iowa State Dental Societies, 1893, Rock Island, Ill., and Davenport, Iowa. Published by the DENTAL REVIEW, Chicago, 1893. Louis Ottofy and F. T. Breene, Secretaries; 228 pages. Cloth.

THE HERMIT OF THE NONQUON. A novel by Charles Nelson Johnson. Rialto series. Rand, McNally & Co., publishers, Chicago; paper, 235 pages. Price, 50 cents. [A clever dialect story of the Canadian border, with an excellent plot, well carried out, and told in a manner both interesting and true to nature.]

STUDENTS' MEDICAL DICTIONARY AND THE ALLIED SCIENCES. By Alexander Duane, M. D. Lea Brothers & Co., Philadelphia. 1893.

PRACTICAL NOTES.

SETTING BRIDGES.

BY A. W. MCCANDLESS, D. D. S.

In fixing a bridge in place permanently several things must be taken into consideration. The abutments must be right, of proper shape, in correct position, and of sufficient strength. They must be free from moisture. The crowns which are to be attached to these abutments must be made to fit. They must be of a proper contour, and great care should be exercised that the occlusal surfaces are properly adapted so that the maximum amount of service may be rendered with the danger of fracture brought to a minimum. An improperly adapted bridge or a tooth on that bridge may give much annoyance simply because the occlusion is not just right, and is also in danger of destruction because too much leverage is brought on one point instead of being properly distributed.

Now as our subject is divided up into different heads as the minister divides his sermon, we will devote ourselves:

FIRSTLY, TO THE SHAPE OF THE ABUTMENTS.—No matter how good the tooth to be used for an abutment, the pulp must be destroyed. This formerly seemed to me a radical measure, but I long since ceased trying to fit a band to a vital tooth; it simply cannot be done. Some raise their hands in holy horror at the bare suggestion of such an idea, they *never* find it necessary to destroy a pulp but save it in every case. That is what they say and if any of the readers of the REVIEW have ever had occasion to examine the crowns made by these persons they will be thoroughly convinced that it would be much better to destroy the pulp so that the abutment (tooth) could be cut down sufficiently to admit of a perfect fitting band under the free margin of the gum, rather than that the life of the pulp should be saved and a band be so made that at the marginal line it should stand away so far from the neck of the tooth, that you could "throw a cat" between the band and tooth, and furthermore leave a space there that will act as a sewer. The man that ecries the destruction of the pulp as being unnecessary, simply has not that fine discrimination to know when a band is perfectly fitted under the free margin of the gum, because to cut a tooth with a live pulp sufficiently so that the circumference of that tooth is no greater anywhere else than at the point under the gum line to which you wish to carry your band, is an absolute impossibility. I am so profoundly impressed with the truth of this statement, that I think there is not even an exception no matter what the shape of the teeth that come under our observation. I used to imagine I fitted bands to teeth before I adopted this plan but I did not. Neither do you, and the sooner you change your methods the better it will be for your patients and for your own peace of mind. Do not deceive yourself with the idea that because the band seems to be up snug against the gum that it is all right. The best evidence you can have of the necessity of this procedure you will find when you discover how small a tooth really is at its neck, when you get the sides paralleled as they should be—an end not to be attained in a vital tooth without almost murdering your patient and having the pulp die from the effects of thermal changes afterward.

Very often, and in fact quite generally, the tooth used for an abutment tips toward the space to be bridged. Of course this side must be made parallel, and it can be done nicely, easily and painlessly where the pulp has previously been removed.

SECONDLY. CORRECT POSITION.—Too little attention is generally paid to the correct relation the crown made for the abutment should sustain to the natural tooth adjoining. By cutting down the abutment sufficiently to obtain an accurately fitting band, a wide space between the teeth is gained, and by properly contouring the gold crown it may be made to knuckle nicely against the adjoining tooth at the occluding surface, thus leaving a self-cleansing space at the neck, which is always found in that location between natural and well formed teeth. By requiring the gold to knuckle against the adjoining tooth, the wearer is not annoyed by food wedging in between the crown and tooth. The occluding surface of the gold crown, of course, should be a *fac simile* of the natural tooth which it substitutes, and should be attached to the band or ferrule in such a position as to allow perfect occlusion with the opposing teeth.

An attachment to a bridge that will be exposed to view must be of porcelain face, as gold is unsightly, and the so-called open-faced crowns, so commonly placed on the anterior teeth, are an abomination, a delusion and a snare, as regards appearance, adaptability and durability, and should be entirely discarded. Up to date, the so-called Richmond porcelain faced crown is the best attachment to any anterior abutment for a bridge. If there is one thing more than another that attracts my attention and disgust while walking along the street, it is to see so many people with badly made, ill-fitting gold crowns in their mouths, looming up like a beacon light, as if warning others to beware. If the anterior attachment to a bridge is to be a bicuspid, the crown should be porcelain faced, and an attachment to the root sufficiently strong can be made by turning a small brass screw into the root. The head of the screw will thus be in the hollow portion of the crown imbedded in cement, and it makes a good, strong attachment.

THIRDLY AND LASTLY. OF SUFFICIENT STRENGTH.—Where a single anterior tooth is to be bridged in, one attachment is usually sufficient, and is made by cutting off the tooth adjoining and making a porcelain faced crown for the root, then a little spur against the palatine side of the other tooth adjoining the bridge tooth, will hold the case firmly against outward pressure. Where more than one tooth is to be bridged in, there must be at least two abutments. I regard a bridge of ten teeth and attachments, extending from say a wisdom tooth to a cuspid, thence to the other cuspid, as stronger and firmer than a bridge of four to six teeth and attachments, with wisdom tooth and cuspid for abutments; and a full bridge with the wisdom teeth, or second molars, and the cuspid roots for attachments, I consider the ideal bridge for strength, rigidity and durabilty. Porcelain faces should never be soldered, but should always be riveted, as the heat required in soldering, and the unequal expansion and contraction between the porcelain and the gold will either check the tooth or weaken it, so that liability to fracture is greatly increased. I was talking with a dentist one time about the danger of checking teeth in soldering. He replied: "I haven't checked a tooth in two years." A few days before this conversation occurred he showed me a bridge he had made, and the cuspid crown he had constructed as one of the attachments for his bridge had a check its full length. He evidently had not seen that check. I have come to the conclusion that a man who never checks teeth in soldering either does not make crown and bridge work, or else he does not know what he is talking about. I admit the checks may not be visible to the naked eye, but I maintain they are there just the same, a fact that the microscope and grinding will reveal. But this is somewhat of a divergence from the subject.

Sulphuric Acid for Opening Root Canals.*

By J. R. Callahan, D. D. S., Cincinnati, O.

All straight and unobstructed canals may be opened by the usual methods, but we find many canals that are constricted just at the chamber, sometimes so much so that they can scarcely be found, while the canal in the root is large and should be opened. Then there are canals in curved roots, and canals obstructed by osseous growths, which if not properly opened up would most likely cause trouble. It is with this difficult class of cases that I wish to deal at this time.

About four years ago I began to open these difficult canals by using a twenty to fifty per cent aqueous solution of sulphuric acid, and the Donaldson root canal cleanser. My method is to saturate a pledget of cotton with the solution and seal it in the chamber for twenty-four or forty-eight hours. Remove it, syringe the cavity with water, and dry it. The cavity will then be white and clean, with a dark spot in the vicinity of each canal showing where the opening can be found. If a nerve broach will not enter the opening a bud drill may be used to follow the stain a short distance, and if then the small broach will not enter, we may feel justified in concluding that the canal needs no further treatment.

But if by exploring we find a canal, we carry the acid to the chamber, and with a No .5 Donaldson cleanser, pump the acid into the opening. This will soften the walls of the canal sufficiently to allow the broach to cut its way into the root, and the acid will sterilize the canal and its contents.

When the broach reaches the end of the root a stronger resistance will be felt, as the thickened cementum seems to offer a greater resistance to the agent used. The canal can be enlarged at will by using a larger broach.

Crooked or obstructed canals may thus be opened in a few minutes, and the canal left in a condition for immediate filling. The rubber dam should always be used, and the adjoining teeth protected by placing the dam on none but the tooth being operated on. At first thought the application of so strong a solution, as fifty per cent may seem heroic, but four years constant use has proved to me that there is little or no danger of injuring the tooth or surrounding tissue if care be exercised. We can keep the action of the acid under perfect control by having a saturated solution of bicarbonate of soda always at hand for immediate use whenever indicated. It is not probable that the acid will go through the apical foramen in sufficient quantity or strength to have any corrosive effect, for the reason that neutralizing agents in the dentine will have materially weakened the acid before it can pass through so small an opening.

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*Abstract of a paper read before the Ohio State Dental Society, December, 1893.

Supposing an abscess to be present and the foramen enlarged as a consequence ; the tissues about the apex of the root will be materially benefited by the acid, for I know of no better agent to break down diseased tissues and destroy germ life.

Prof. J. S. Cassidy in his valuable text-book, "Dental Chemmistry and Materia Medica," page 77, says : "The acid attacks the earthy portions, forming insoluble calcium sulphate, and at the same time dehydrates the animal or gelatinous portion, which is mainly made up of carbon, hydrogen and oxygen. These two latter elements are withdrawn as already alluded to, leaving the indestructible carbon as a residue, to be incorporated with the insoluble sulphate, producing thus a protecting covering to the unaffected parts beneath, against further inroads both of the causing agents and other solvents."

Mr. George Pollock, F. R. C. S., Surgeon to St. George's Hospital, says : "Dilute sulphuric acid does not affect the living, acting chemically on diseased bone alone," and gives the following experiments. Portions of dead, diseased, and healthy bone were selected and subjected to the action of sulphuric acid, viz. :

No. 1.	Dead bone	10 grains.
" 2.	Diseased bone	10 "
" 3.	Healthy bone (middle age)	10 "
" 4.	Healthy bone (old age)	10 "

Exposed to the action of a mixture of sulphuric acid and water, one part in four, for three days at a temperature of 100°, the following were the results :

No. 1. Dead bone : Phosphate of lime, 2 grs. Carbonate of lime, 3.3 grs. dissolved in the mixture.

No. 2. Diseased bone : Phosphate of lime 2 grs. Carbonate of lime, 1.3 grs. dissolved in the mixture.

Nos. 3 and 4. In both specimens of healthy bone, *no action took place.*

Prof. Garretson says, in the treatment of "Caries of the Maxilla," he has used the officinal ordinary sulphuric acid. (Garretson's Oral Surgery, Third Edition, pages 705 and 706.)

"On the soft tissues the solution will have a corrosive and astringent effect, or in other words will break down or destroy the diseased tissue, leaving a fresh, clear field for nature to take care of herself with the assistance of milder antiseptic treatment."

MEMORANDA.

Dr. T. W. Brophy has just received the appointment of Dental and Oral Surgeon to the Presbyterian Hospital, Chicago.

Catching's Compendium for 1893 is definitely promised by February. This publication is becoming deservedly more popular each year.

Dr. Joseph W. Wassall will leave Chicago for Russia the latter part of January. He purposes remaining in the land of the Czars several months.

Word has just been received of the death of Dr. Daniel Neall, of Philadelphia, on January 6, 1894. Also of Dr. T. B. Wheeler, of Chicago, on January 9, 1894.

Another example of the ordinary newspaper joke.—"An exchange contains an article entitled: 'Why do people have poor teeth?' It is probably because they cannot afford to buy good ones."

Physician (with ear to patient's chest): There is a curious swelling over the region of the heart, sir, which must be reduced at once.

Patient (anxiously): That swelling is my pocketbook, doctor. Please don't reduce it too much.

Dr. A. W. Harlan leaves for Europe about the middle of this month. He goes to enjoy a well-earned rest. His labors on the Dental Congress during the past year have been phenomenal. Few men could have carried the work through so successfully as he, and he deserves, and will always have, the thanks of the profession for it.

We clip the following notices from the daily press:

Dr. A. D. Bull, one of the most prominent dentists in Central Illinois, was found dead in an operating chair in his office at Alton yesterday morning by a letter carrier. He had evidently been dead several hours, and heart disease is believed to have caused his death.

JACKSONVILLE, Ill., Dec. 20.—Dr. Charles K. Sawyer died at his home here to-day, over 80 years old. He was the first practicing dentist here and a pioneer of the city and county. He held many offices of importance and trust during his life and was a prominent member of the masonic fraternity.

UNMEASURED GAS.

The gas man called on the dentist to have a tooth extracted.

"Do you want to take gas?" asked the D. D. S.

"How much will it require?"

"Oh, don't worry about that; I'm not going to measure with the meter you use on me."—*Detroit Free Press.*

A Spanish Monthly of Dental Literature is shortly to be issued at Philadelphia. It is to be called *La Revista Dental Americana*, and is intended for circulation principally in Latin America, Portugal, Spain and her Colonies. The idea is to give to these countries through the medium of the Spanish language, the latest thought of the profession of the United States. R. W. Edwards, D. D. S., is the proprietor and publisher.

ODONTOLOGICAL SOCIETY OF CHICAGO.

At the regular meeting of the Odontological Society of Chicago, held at the Chicago Athletic Club on Tuesday evening, December 19, 1893, the following officers were elected for the ensuing year: W. V. B. Ames, President; C. N. Johnson, Vice President; Louis Ottofy, Secretary Treasurer; C. S. Case, Curator; Board of Censors: P. J. Kester, A. W. Harlan, J. W. Wassall.

Louis Ottofy, Secretary.

It is reported that a Chicago dentist was "held up" by foot-pads on the street Christmas Eve, and relieved of two sets of "false" teeth which he was "delivering" at eleven P. M. to as many "customers." If the press reports have colored this thing—and probably they have—it is all right; but if not, there are several queries in connection with it. What could foot-pads want with artificial teeth? (It is stated they were informed as to the contents of the packages.) What kind of people would want their artificial teeth "delivered" to them at that hour? What kind of a dentist—but the queries keep increasing, and we desist.

The Louisiana State Dental Society will meet at Tulane Hall, New Orleans, February 7th, 1894. A determined effort is being put forth on the part of the officers to make this meeting the best that has ever been held in that State. A special inducement to dentists from a distance lies in the fact that the sessions open on the day following "*Mardi Gras*." Visitors can therefore revel in the glories of the spectacular, and then sober their senses by attending the society. February is a delightful month in New Orleans, and visiting dentists may be assured of a right royal welcome from their southern confrères.

ST. LOUIS DENTAL SOCIETY.

The following officers for the year were elected January 2, 1894:

President—Dr. J. B. Newby.

Vice President—Dr. J. B. Vernon.

Recording Secretary—Dr. F. F. Fletcher.

Corresponding Secretary—Dr. John G. Harper.

Treasurer—Dr. A. J. Prosser.

Committee on Ethics—Dr. William N. Morrison, Dr. P. F. Helmuth, Dr. O. H. Manhard.

Committee on Publication—Dr. L. A. Young, Dr. P. H. Eisloeffel, Dr C. L. Pepperling.

John G. Harper, *Corresponding Secretary.*

At the last meeting of the Odontographic Society, held at the Briggs House, Dec. 11, 1893, the following officers were elected for 1894:

President—F. H. Zinn.
Vice President—C. E. Meerhoff.
Corresponding Secretary—G. B. Perry.
Recording Secretary—U. G. Poyer.
Treasurer—E. Noyes.

BOARD OF DIRECTORS.

F. H. Zinn, U. G. Poyer, J. G. Reid, G. J. Dennis, D. M. Gallie.

BOARD OF CENSORS.

J. W. Slonaker, C. H. Wright, W. H. Fox.

Report of Recording Secretary showed a total membership of 119, an increase of 53 for the year. There was an average attendance of 36 per meeting.

The latest—the very latest—is where a Chicago dentist was seriously assaulted for the alleged reason that he had given more pain than necessary in filling a tooth. The particulars as stated are as follows: A lady patient sat in the dentist's chair about three hours one afternoon to have a tooth filled. The operation was painful, but, according to the dentist, the patient made no unusual complaint and appeared to bear the pain heroically. She even paid part of her bill before leaving the office. When her husband came home at night, however, and learned of the ordeal she had passed through, he was so incensed that early the following morning he went to the office of the dentist and waiting for him in the hall gave him a "sound thrashing." The dentist was accordingly confined to his room while the husband was arrested and locked up in a police station. Both parties claim that "the end is not yet." We suspect that the whole facts in this case have not come out, and it probably will be as well if they never do.

DR. CHAS. H. OSGOOD.

The following resolutions were passed at a meeting of the Alumni Association of the Boston Dental College, December 13, 1893:

WHEREAS, That silent messenger, death, has again invaded our ranks and taken one of its most earnest and esteemed members, a former President of this association. Therefore, be it

Resolved, That in the death of Dr. Charles H. Osgood the Alumni Association as well as the Boston Dental College have sustained a loss which will be long felt. To him, perhaps as much as to any other graduate, in his interested and valuable services, is due the high standing to which the college has attained.

Resolved, That we extend our sincere sympathy to his bereaved family in this, their sad affliction.

Resolved, That these resolutions be entered on the records and a copy be sent to the family of the deceased, and to the several dental journals for publication.

STEPHEN G. STEVENS,
JAMES H. DALY,
R. R. ANDREWS.
} *Committee.*

The Tennessee State Dental Association will meet in Nashville on March 27th to 30th. The society is looking forward to a good meeting. The following are the officers and committees:

Dr. W. J. Morrison, President; Dr. C. H. Smith, First Vice President; Dr. B.

D. Brabson, Second Vice President; Dr. W. W. Jones, Recording Secretary; Dr. H. E. Beech, Treasurer; Dr. S. B. Cook, Corresponding Secretary.

Executive Committee—Dr. L. G. Noel, Dr. R. M. Bogle, Dr. J. P. McDonald.

Committee on Entertainment—Dr. R. B. Lees, Dr. D. R. Stubblefield, Dr. R. R. Freeman.

Committee on Banquet—Dr. J. Y. Crawford, Dr. D. B. Blakemore, Dr. Gordon White.

Reception Committee—Dr. W. H. Morgan, Dr. R. B. Lees, Dr. H. W. Morgan, Dr. J. P. Gray, Dr. Marvin McFerrin, Dr. E. F. Hickman, Dr. J. M. Ashburn.

Committee on Finance—Dr. J. Y. Crawford, Dr. H. W. Morgan, Dr. E. F. Hickman.

PURIFYING WATER.

Dr. Daremberg, in *Medecin Moderne*, Paris, concerning the means of rendering cholera infected water innocuous, says that this end may be accomplished in one of three ways, viz., by filtering, by boiling, or by the addition of some chemical substance which will destroy the germs of disease. The first of these methods is, as a rule, ineffective, and can be relied upon only when every detail is most scrupulously attended to. The second is effective, but inconvenient, and cannot always be carried out, fire and a suitable vessel for boiling being indispensable. The third method is one which, he says, is equally effective with boiling, and has the advantage that it can be carried out anywhere and at any time.

The purification of water has been effected by the addition of alum but the author prefers the process of acidulation, especially in cases of possible cholera infection. Citric acid may be added to the water in the proportion of 60 or 80 centigrammes 2 to 2⅓ ozs. to the liter of water. This method is inexpensive, does not impart any unpleasant odor or taste to the water, and can be employed anywhere, without any cumbersome or delicate apparatus. In place of citric acid, tartaric or hydrochloric acid may be used, if desired.

The subject of hypnotism seems to be claiming considerable attention from the profession recently; and the two following references to it may prove of interest. The first is taken from the *Journal of Hygiene*, New York, the other from the *Arena*, Boston.

HEALING WOUNDS THROUGH MENTAL SUGGESTION.

Many of us are familiar with accounts of the wounds inflicted by African dervishes on themselves; but the statements which the narrators make, that they do not inflame, and may be quite healed in twenty-four hours, tend to discredit their truthfulness. Delboeuf's observations, made two or three years ago, make these stories more plausible. It is well established that if in certain hypnotic subjects, a suggestion is made during hypnotic sleep, that a cautery or a blister, if applied to a part of the body, it will produce, after due lapse of time, an actual reddening of the skin. The hallucinatory feeling of inflammation produces in these persons a genuine inflammation. M. Delboeuf argued from this, that the feeling of pain, however useful in other respects, must itself be an irritant, and goes on to infer that the abolition of it from an actual wound ought to accelerate its healing. On a young woman, whom he could make insensible by suggestion, he marked two corresponding spots, one on each arm, and made on each an identical burn with a hot iron, announcing to the patient while in trance, that the one on the right should not be felt. The suggestion took effect, and the next day, when the bandages were taken off, and the left arm presented a sore with an inflammatory area three centimeters in diameter, the right arm showed only a clean scorch of the skin of the exact size of the iron, without redness or inflammation. On another subject, similar results were obtained with burns and blisters, the spots chosen being near together on the same arm or on the neck.

HYPNOTISM IN DISEASE.

The chief arguments used against the employment of hypnotism in disease are, first, that it subordinates and enervates the will; second, that it renders the patient liable to be influenced by persons of evil intent, and, third, that only nervous or hysterical persons are subject to its influence. My own experience is that it may be used without injurious effects, and, also, that it may take the place of narcotics in a large number of cases in which they are now used. I have myself used it with advantage in delirium, in insanity, and in chronic alcoholism. I have successfully treated one case of kleptomania, and two cases of excessive irritability of temper. At the same time, hypnotism is a two-edged sword. Wielded by an unskilled hand, it may cut both ways deep into the faculties of intellection, and into the nervous system generally. Also, it should never be used save by a skilled hand upon patients of an unbalanced mind, accompanied by what is known in medical parlance as *paranoia*. In my treatment of a perfectly healthy, calm, intelligent, unimaginative man, whom I operated on fifty-one times, I found that the diapason of his whole mental and emotional system would give forth concordant sensations of pleasure, or discordant sensations of pain, at the will of the operator.

Summing up, I would say that with hypnotism, as with every other new remedy, there is great danger that, on the one hand, it may be used indiscriminately, or, on the other hand, be scouted by a senseless skepticism. It has, beyond doubt, its definite limits of usefulness, and the medical man of the present day, realizing the futility of many of the old methods of treating disease, should keep his mind open to the reception of every new discovery.

A NEW MINERAL DISCOVERED.—CRYSTALS OF "CARBORUNDUM" CREATED BY A CHEMIST.

Philadelphia *Times:* Incidentally to an attempt to produce diamonds by artifice an American chemist has recently discovered a mineral hitherto unknown—the hardest substance in existence with one exception. It is called "carborundum."

The inventor for making his gems obtained from a concern in Lockport, N.Y., the use of its aluminum smelting apparatus. In reducing that metal electricity is employed, generating an enormously high temperature. As a chance experiment he put into the furnace a lump of clay together with a piece of graphite, which is pure carbon. The result was some small wine-colored crystals of rhomboidal shape. On examination it was found that they were harder than sapphire. Diamond is the hardest of natural minerals; sapphire comes next, and then ruby.

Chemical analysis proved that the crystals were composed of carbon and silicon in a combination hitherto unheard of. It does not occur in nature. The process above described, repeated again and again, produced the wine colored rhomboids every time. A company has been formed to manufacture them for polishing all sorts of things, even diamonds. They are crushed to powder like emery and made into wheels with a cementing compound. The demand for them is already greater than the supply. At the office of the Geological Survey this new grinding material is to be tried in the preparation of thin slices of stone for microscopical examination. These films of rock—granite, marble, or what not—are reduced to such thinness that one can read through them.

Mr. Kunz, the famous expert in gems, believes that most of the precious stones will eventually be produced artificially. All of them are very simple in their composition—the diamond, for example, is pure carbon, and the ruby is almost pure alumina—and the problem is merely to make their elements crystallize properly. Chemists, who have hitherto confined their attention to taking things apart, are beginning to learn how to put them together again. The English professor, Maskelyne, manufactured diamonds in his laboratory several years ago, though they were too small to have commercial value. Emeralds have been produced accidentally at the pottery works of Sevres, France.

ODONTOGRAPHIC SOCIETY.

The following programme has been arranged for the society during the coming year:

January. "The Evolution of Mechanical Principles in the Treatment of Fractures of the Maxilla." By Dr. E. H. Angle, Minneapolis, Minn.

February. "Amalgams. Under what Condition may they be Used Successfully." By Dr. P. J. Kester. Discussion opened by Dr. C. P. Pruyn.

March. "The Etiology and Pathology of Diseases of the Respiratory Mucous Membranes." By H. B. Williams, M. D. Discussion opened by Dr. E. L. Clifford.

April. "Crowns and Bridges—When to Use Then." By Dr. C. E. Vernay. Discussion opened by Dr. E. S. Talbot.

May. "Treatment and Filling of Pulpless Teeth as Learned from Papers in the Dental Congress." By Dr. J. D. Banes. Discussion opened by Dr. A. W. Harlan.

June. "New Medicines, their Action and Application in the Mouth." By Dr. F. K. Ream. Discussion opened by Dr. E. Mawhinney.

September. "Of what use to the Practitioner of Dentistry is the Study of Dental Histology and Embryology?" By Dr. H. P. Wadsworth. Discussion opened by Dr. C. N. Johnson.

October. "Danger in the Personal Use of Cocaine." By Dr. Louis Ottofy. Discussion opened by Dr. J. G. Reid.

November. "How Can a Dentist Best Enlarge and Improve his Practice Ethically?" By Dr. W. H. Fox. Discussion opened by Dr. T. W. Brophy.

December. "Arsenic." By Dr. A. G. Johnson. Discussion opened by Dr. E. D. Swain.

F. H. ZINN,
G. J. DENNIS, } *Committee.*
E. L. CLIFFORD.

The following is taken from the *Wisconsin*:

The east side young man who won fame by swallowing a silver dollar is not in it with a west side young lady who has swallowed a whole upper set of teeth. The young lady who lost her teeth in this extraordinary manner is Miss Helen Burns, who resides at 611 State Street, and is employed in an East Water Street restaurant. The accident occurred yesterday morning before she had arisen. She had neglected to take out the plate when she retired and in some manner the teeth had fallen into her throat. She was awakened by the pain caused by their passage down her throat. After they had been swallowed they caused no more pain and so far she has been in no way inconvenienced by their presence in her stomach.

This morning Miss Burns applied to Dr. Carmichael, the Wisconsin street dentist, for a new set of teeth, and when interviewed on the matter the doctor confirmed the story. It was an upper set on a rubber plate and was whole except for the loss of three teeth on one side. The dentist was not inclined to believe that the young lady could have swallowed so large a plate, but she convinced him that she had. It was a temporary plate which having been worn too long, allowing the gums to shrink away from it, had become too large. Being too large a piece had broken out of it and it would no longer hold itself in place. Miss Burns told the doctor that the plate did not cause her any pain, but she was frightened, naturally enough. The doctor assured her that there was no cause for alarm so long as she felt no pain.

Dr. Carmichael says that while people are sometimes choked by their false teeth getting into their throats the cases where the teeth have been actually swallowed are very rare. Only one such case ever occurred in this city to the doctor's knowledge, and then the teeth lodged before they entered the stomach and the man died in great pain. Dr. Carmichael thinks that having safely accomplished the feat of swallowing the plate the young lady is in no danger and will perhaps never be troubled by the teeth. He does not think that the plate can pass into the intestines and he is in doubt as to what is likely to be its fate. He says that nothing can be done until the plate makes its position known by a pain. Then relief may be afforded by an operation or possibly in some other manner.

Dr. Herbst makes a somewhat spirited reply to Dr. Miller's paper before the recent congress, as will be seen by the following letter in *Zahnarztliche Rundschau:*

ABOUT VARIOUS METHODS TO AVOID THE REMOVAL OF DEVITALIZED TOOTH PULPS.

In a discourse with above title, written by Prof. Dr. Miller, of Berlin, and read at the International Dental Congress at Chicago, the author was kind enough to refer to me. He claimed my method of treatment of diseased tooth pulps and the closing of the pulp cavity with tin or gold, was a modification of the method of Witzel and Baume. Does Prof. Miller really believe this? What these two gentlemen expected to effect is sufficiently well known. Then Prof. Miller writes that so many favorable results had been reported about my methods that it appeared desirable to investigate the same. If he had only done this! He would have done the science of dentistry a great favor, and would have been able to have something of the greatest value to read at Chicago. As it was, he has advanced some unproven assertions. Furthermore, Prof. Miller claims that the substance which I use to deaden or kill diseased tooth pulps is cobalt. But I have used arsenic, metallicum, crudum, also *scherbenkobalt* or so-called *fliegenstein* for a great many years, for this reason, that it is less dangerous, than white arsenic. It may also be possible that it contributed a great deal toward the excellent results, which I am able to report since 1884, in the use of hermetical sealing.

Boedeker and other men have received this remedy from me. The question, whether you gain the same results with white arsenic that you do with *scherbenkobalt*, is still unsettled. I shall at any rate continue to use my remedy.

Furthermore, the author says that the claim that a cavity would be more hermetically sealed by rotation of tin than by the usual method of using cement covered by amalgam or gold does not agree with the general view or opinion. To this I answer that it is impossible to get a good closure with cement, in fact this is only possible with gold, tin or lead foil, and then only with the assistance of the rotation method.

What was reported in the discourse, about the absence of antiseptic precautions in my method, sounds somewhat strange. Prof. Miller must know, that I allow the *scherbenkobalt* mixed with concentrated carbolic acid, to remain in the cavity for twenty-four to forty-eight hours, so that the septic matters that may be in the cavity are swamped as it were during this time. The great number of bacteria, which the author supposes are on the tin foil may possibly be of such a character that they hold on to the cavity with their claws.

What Prof. Miller writes about the use of copper amalgam, which for all its highly praised antiseptic results, is not to be used for this purpose, I endorse. For the use of copper amalgam, we must especially credit Prof. Miller, and it should be a satisfaction to him, that this material is nowadays used by the ton. How frightfully beautiful a mouth looks, in which there are many copper amalgam fillings, is no doubt sufficiently known to every man of the profession. It also has the great advantage of discoloring, in time, gold fillings, gold crowns and bridges, which are made of the finest gold.

In closing I would like to ask my colleagues at home and abroad, not to allow themselves to be prevented by Prof. Miller from working after the method indicated by me. Since 1884 I have treated every tooth with a diseased pulp in that manner and the advantages are very great. WILHELM HERBST, Bremen.

[Dr. Herbst must be commended for his earnestness, but in this matter he is seriously in error. "Every tooth with a diseased pulp" cannot be treated to advantage by his method.]

MINNEAPOLIS DENTAL SOCIETY.

The following program is somewhat lengthy, but the DENTAL REVIEW gladly gives space for it, as it is believed to be the most complete program ever issued by a local society. It is a model for other societies to follow.

Officers: J. W. Penberthy, President; I. C. St. John, Vice President; W. P. Dickinson, Secretary; H. A. Knight, Treasurer. Executive Committee: T. E. Weeks, Chairman; W. A. Spaulding, J. D. Jewett. Membership Committee: C. C. Coffee, Chairman; M. G. Jenison, D. H. Carpenter.

The Executive Committee, in presenting this outline of work for the society for the season of 1893-4, hopes to have the coöperation of every member. Without this interest, the work will fail in its object.

Eight subjects have been chosen. A syllabus of each is printed, and every member is requested to write briefly his thoughts on the subject along the lines suggested, in books provided by the committee; from the notes so prepared, he will address the society at its evening session. In this way we will get the mature thoughts of the members, and they will be recorded in a uniform manner for preservation.

The society has decided to hold a clinic or demonstration in the afternoon, followed by the meeting in the evening, at which time we hope to have every member prepare and bring to the place of clinics such work as is outlined under the head of "Demonstration" for each subject, and to perform at the clinic such work as is indicated. Teeth will be provided by the Chairman of the Executive Committee. These may be mounted in plaster.

While it is desirable that all will follow the outline as suggested, it is the wish that each member will enlarge upon the subject as he desires. Patients will be furnished for those members who desire them.

Wednesday, October 18, 1893. "Cleansing, Preparing and Filling Root Canals," Syllabus, 8 P. M.

1. Which teeth have canals most difficult to cleanse, prepare and fill? Why?

2. Methods of rendering aseptic. Why chosen?

3. Drying canals; its desirability. Methods. Why chosen?

4. Suggest treatment for canals that cannot be filled.

5. Materials for filling canals. Why chosen? Methods of preparation and introduction.

Demonstration, 3 P. M. "Upon Natural Teeth Mounted in Plaster or Dummy Articulator."

1. Teeth of the several classes, superior and inferior, with cavities prepared to entrance of canal or canals.

2. The same, with canals prepared for the reception of filling.

3. The same, with filling inserted.

All teeth to have apices of roots enveloped in wax before mounting in plaster investment.

At the clinic, each operator will demonstrate such points as he deems important, especially the preparation and introduction of filling, upon other teeth similarly mounted.

Finally, each root filled will be removed from its investment and filed until the canal is exposed throughout its entire length, showing the condition of the filling.

The demonstrations particularly desired for this meeting are cavities upon the distal surfaces of molars, superior and inferior, and superior first bicuspids. Additional operation, at the discretion of the operator, will be acceptable.

Wednesday, November 15, 1893. "Gold Fillings." Syllabus, 8 P. M.

1. Properties.

2. Varieties—Cohesive, noncohesive; soft.

3. Preparation—Foils in their different forms of preparation; cylinders, blocks and mats; crystalline preparations.

4. Preparation of cavities—Occlusal surfaces (pits and fissures); proximal surfaces of incisors and cuspids; proximal surfaces of bicuspids and molars.

5. Insertion—Where noncohesive gold may be used; where cohesive gold must be used.

6. Finishing.

Demonstration, 3 P. M.

Bring to the clinic at least one cavity of each class, prepared for filling, and one of each class with filling in its various stages.

At clinic, fill at least one cavity demonstrating some point or method.

Wednesday, December 20, 1893. Aluminum Plates. Syllabus, 8 P. M.

1. Characteristics and behavior in the mouth.
2. Swaging and annealing.
3. Attaching of teeth.
4. Casting.
5. Finishing.

Demonstration, 3 P. M.

Bring to clinic die and counterdie or preparation for casting completed denture.

At clinic, swage or cast a plate; if swaged, adapt to model and prepare it for attachment of teeth; illustrate any other points of interest.

Wednesday, January 19, 1894. "Porcelain Crowns." Syllabus, 8 P. M.

1. Preparation of roots—For crowns without bands: for crowns with bands.
2. Office and best shape for dowel pin.
3. Bands, their advantages and disadvantages, with methods of fitting.
4. All porcelain vs. porcelain faced crowns.

Demonstration, 3 P. M.

Bring to clinic one root prepared for all porcelain crown, with the operation in its several stages, and one with crown complete in position, or articulated model; the same for a porcelain faced crown.

At clinic, assemble and unite the various parts; finish and fix upon root in articulated model, either a porcelain crown with band, or a porcelain faced crown.

Wednesday, February 16, 1894. "Gold Crowns." Syllabus, 8 P. M.

1. Where may they be employed ?
2. Seamless vs. crowns with band and articulating surface united by soldering.
3. Solid cusps or grinding surface vs. swaged caps reinforced with solder.
4. Sharp or blunt outlines.

Demonstration, 3 P. M.

Select some one or more methods of making allgold crown, and bring to clinic a completed specimen mounted on root in articulated model; also same, or another method, in its various stages.

At clinic, assemble, unite, finish and mount on root in articulated model the parts previously prepared.

Wednesday, March 16, 1894. "Cements." Syllabus, 8 P. M.

1. Oxychlorides—their properties and where useful.
2. Methods of mixing and using.
3. Oxyphosphates—their properties and uses.
4. Methods of mixing and using.
5. The field of usefulness for cements.
6. Combination with other material.

Demonstration 3 P. M.

Bring to clinic cavities prepared for reception of cement fillings, also specimens of finished fillings of cement either alone or in combination.

At clinic, make one or more fillings of cement, alone or in combination, showing methods of mixing, inserting and finishing.

Wednesday, April 20, 1894. "Amalgams." Syllabus, 8 P. M.

1. Characteristics of amalgam alloys.
2. Characteristics of amalgams.
3. Influence of various methods of mixing.
4. Behavior in mouth under various methods.
5. Preparation of cavities for amalgam.
6. Inserting and finishing.
7. Combinations with other materials.

Demonstration, 3 P. M.

Bring to clinic cavities prepared for reception of amalgam fillings; also completed fillings.

At clinic, insert and finish such fillings as necessary to demonstrate the point you desire.

Wednesday, May 18, 1894. "Phagadenic Pericementitis." Syllabus, 8 P. M.

1. Etiology.
2. Diagnosis.
3. Parts involved.
4. Various stages of the disease.
5. Treatment.
6. Prognosis.

Demonstration, 3 P. M.

Presentation and treatment of such cases of pyorrhœa as are obtainable.

Presentation of any case of interest.

June meeting.

Annual reunion of members and their friends.

Date to be fixed by the committee.

THE

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ORIGINAL COMMUNICATIONS.

WHAT THE DENTAL CONGRESS HAS TAUGHT US.*

BY LOUIS OTTOFY, D. D. S., CHICAGO, ILL.

For the last three years the thinkers, writers, and investigators of the dental profession, have reserved their most matured thoughts and the results of their most painstaking investigations for presentation before a body of their fraternity whose membership it was expected would be composed of dental practitioners from all over the world. It is no wonder, then, that the body of the profession is anxiously looking for the conclusions of the congress. The reports which have been published in the dental journals, full and apparently complete as they are, are like the mist before the sunrise, they will seem microscopical when compared with the completed results. It would be almost impossible to present the best papers, requiring care in preparation, time and expense in illustration, in what were intended to be quickly presented résumés. For this reason, those who were not present at the congress, have no conception of what it has accomplished. On the other hand, those who were present, will acknowledge that it was impossible for any one to hear and see all that transpired. Indeed, but few, if any, had sufficient opportunity, inclination, and certainly not the appropriate surroundings, to have been able to comprehend the work of a single section. The preparation for, and final issue of matter from the press, especially articles which require illustrations to be made with the utmost care, approved by those most familiar with the subject illustrated, in fact the issuing of a large volume containing scientific articles, every line and every word of which must convey the best thought of the author, uttered in four different languages, by men, of whom some were unfamiliar with even the official languages—in view of these facts I am inclined to think that, if we may begin to peruse our official report during the Christmas holidays of the present year we may be truly thankful. By that time nearly one and a half years will have passed over the congress. Since 1886, I have been a member of what is known as the section on "Dental Education, Literature and Nomenclature" of the American Dental Association, and during these eight years the smallest percentage of progress was reported in the branch last mentioned, namely, nomenclature. In fact, for several years, the report merely contained the statement that there "is nothing to report."

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*Read before the Chicago Dental Society, Jan. 2, '94.

For these reasons, then: (1) because the great majority of dentists, know practically nothing of the most important work of the congress, (2) because those who were present, while listening to an excellent communication read in one section, were of necessity debarred from, at the same time, hearing an equally good paper or report in another section, and (3) because it will be some time before any one will be placed in full possession of all that has transpired, I believe it proper to call your attention at this time to some things that the congress might or should have taught us. It seems to me, that one of the greatest blessings that the congress has showered upon us is the privilege of discussing its work at our convenience. Probably those who were hasty in giving their "impressions" of the congress, have taken into consideration only the past and failed to reckon with the future. By a mutual agreement with the essayist who follows me, and who treads on more interesting and probably more practical ground, I have selected for presentation to you a consideration of the "Report of the Committee on Nomenclature." I am somewhat urged to do this, as a result of my observation regarding the meager and practically unsatisfactory work hitherto done in this line in our own country. I might add, that it is my belief that there has never been compiled a report on this subject, that in its completeness bears even a resemblance to the one I am about to discuss, one which I feel certain will also prove to be one of the most valuable portions of the official publication. With due appreciation of the labors of the foreign members of the "Committee on Nomenclature" I am inclined to think that the report is principally an American production, and, as is usually the case in similar instances, the product of the pen of the chairman, who in this case is the matchless giant of the West, Dr. G. V. Black, of Jacksonville, Ill.

In broaching a subject of this kind, the average practitioner at once volunteers the observation, that it is another of those dry, theoretical subjects, forgetting the fact that there is nothing more practical and useful than speech, and that man stripped of all worldly possessions, with a mind filled with the accumulated knowledge of the centuries that have passed before, has only the one power remaining—to communicate by speech. If then there is speech, and if things have names, why not correct speech and proper names? I apprehend, that while it is important to properly, scientifically, and correctly name all things, to us as dentists it is more essential that the language we use in the discussion of scientific subjects relating to our branch of knowledge, shall be such that we can clearly understand each other—something which any of you who attended the last few meetings of this society, must have noticed, is wanting. The constant confusion, the necessary after explanation, the I-said-this and I-meant-that, are Babylonian in quantity and quality.

Nomenclature endeavors to so name and signify things and locations, that all of us should feel content to use them in their proper places, but its teachings are accepted much like the metric system, probably as rapidly but less universally.

We should bear in mind the two cardinal points that the name given by the dental student of words has its basis of correctness in the condition, location, thing or whatever it may be that is named, when logically and scientifically analyzed; and secondly, that the word to be used must convey to some one else the ideas of the speaker or writer and thus lead to similar results. Strangely enough, that very element in the profession which needs a good nomenclature the most, least cares to discuss it. They forget that the most complex, when understood, is simple; and that the object of those who endeavor to improve our nomenclature is not to produce a large number and variety of words but to simplify, correct and abbreviate those we have, and to add only such as will pass scrutiny from every standpoint, so that when they are once adopted it may be possible to rely on their permanency. That this work should go on at a rapid pace and that it should be supported most heartily by the profession, is a duty we owe to students who are compelled to learn what are known as the elementary principles of dentistry for which now three years are required, and which it will, in a short time, be necessary to increase to four years. In justice to these 4,000 students the world over, the profession can do nothing less, than at least undo the word-juggling of its members past and present, well meant to be sure, but erroneous. What would materia medica be if it tolerated discrepancies similar to those we have allowed to exist regarding such terms as "approximate," "proximate," and "anterior" and "posterior" alone? Aconite might as appropriately be confused with quinine. Could materia medica for a moment tolerate these as synonyms? It should also be borne in mind that the principal object of nomenclaturists is to simplify, and when possible to substitute a meaning word for an unmeaning one. An example in point that occurs to me at this moment, is the meaningless term "canine," the use of which in dentistry should be completely abandoned to be replaced by "cuspid," a word that is almost descriptive; while "canine" might just as properly be "feline," yet lose none of its strength as a term used to indicate a certain "human tooth." Recently I noticed a proposition to replace the obnoxious, and to me apparently vulgar expression, the "lower jaw" and its almost equally objectionable synonym "inferior maxilla," or what is even worse "inferior maxillary," by the term "mandible." I am not, at this moment, aware of any good reasons why the latter term is not preferable to the present names. It can be used in various forms, as "mandibular," "mandibulate," etc., which will do away with the use of whole sentences now necessary to express certain things relating to the lower jaw.

I have sometimes heard the importance of this work so underestimated that I have somewhat looked into the question of the number of scientific terms used in that part of the medical nomenclature, which can be indisputably considered "dental." It is useless to go into generalities, but to give an idea of the importance of the subject, I will simply mention the fact that for the purpose of describing by word of mouth, the different localities encountered by the dentist and relating to some point or location without or within the teeth of one human being, words must be used to express and convey to the listener over 2,000 distinct impressions. In other words, I could name to you 2,000 different locations within and upon the teeth alone that would necessitate you to form 2,000 mental images to grasp my meaning. This being so, it will be apparent to even an unsophisticated novice that it must require a large number of words to convey these ideas, and it is this very thing that the report which I am now considering, discusses. It is not possible, nor would it be advisable, to force a new vocabulary on the profession at once; changes of this character are gradual and require time; yet each of us can, by discarding one or more obsolete or confessedly wrong expressions, simplify the dental vocabulary of a decade hence, and so on. Being less conversant with the general construction and use of the English language, than nearly all of you are, I am more likely to note the changes for the better. In pronunciation alone I notice as an instance that nearly as many now say "cement," with the accent on the first syllable, as those who still pronounce it ce*ment*. The committee's report is so long and exhaustive, that it is out of the question to discuss—if discuss at all—more than a limited portion of it at a time, and in freely quoting from the report I would call your attention principally to the terms proposed to describe the method of naming cavities.

"The development of names of carious cavities which describe their location is comparatively recent. Its first appearance is scarcely fifty years old, and the first attempts to systematize and bring these names into some kind of orderly sequence was in 1881. * * *

The use of these names seems to have developed largely in the society and journal literature, and recent writers of books have been making the effort, it appears, to bring these scattered, and sometimes almost incoherent applications of terms, into orderly arrangement, showing plainly the appreciation of a need for such terms. Naturally, the first efforts are defective; but enough has been done to show plainly the form which this nomenclature is taking, and to point the way to its orderly arrangement. * *

The term *compound* cavity is employed to designate a cavity that involves more than one surface of a tooth. The phrase *compound fracture*, as used in surgery, always refers to a complication by injury of the soft parts, and some dental writers have used it in the same way, designating a cavity as *compound* when the pulp is involved. This leads to confusion that needs correction. The tendency noticed in dental literature seems to be toward dropping this phrase. Other words available are *complicate*, *complex* and *composite*. The word *composite* seems to be the best adapted to the purpose. The terms *simple cavities* and *composite cavities* may be used in a general way; the first indicating cavities that involve but one surface of a tooth, and the latter indicating a cavity that involves more than one surface.

This latter may be composed of two simple cavities that have become united by extension of one simple cavity that has involved another surface by extension; or of a simple cavity that has been made to involve another surface by extension in excavating for the purpose of filling. They should be used only as *class names*, and when it is not desired to express the location of the cavities; as in the phrases *simple cavities in the molars*, *composite cavities in the bicuspids, etc.* * *

The tendency is to designate cavaties by the anatomical names of the surfaces of the teeth. This method should be closely systematized.

Carious cavities shall be designated by the names of the surfaces of the teeth in which they occur. These names are: *labial*, for the incisors and cuspids; *buccal*, for the bicuspids and molars; *lingual* for all of the teeth, discarding the word *palatal; mesial*, and *distal* for the proximate surfaces; *occlusal* for the bicuspids and molars, and *incisal*, for the cutting edges of the incisors and cuspids. * * *

When two surfaces are involved the names of the surfaces are rendered in compound words, giving the preferences, first to *mesial* and *distal* as the prefixes; and second to *occlusal*. In doing this drop the final *al* and add *o* thus: *disto-lingual*, *mesio-occlusal*, *occluso-buccal*, *disto-incisal*, *etc.*

When three or more surfaces are involved the names of the individual surfaces are rendered in a compound word thus: *mesio-occlusal-distal-cavity*. * * *

Cavities in the angles of the teeth are designated by the anatomical names of the angles in which they occur, thus: *disto-buccal angle cavity*, *mesio-lingual angle cavity*, *etc.*

As a class name mesial and distal cavities are called *proximate cavities*, thus: *proximate cavities in the molars*.

Besides these there are certain pit cavities that seem to merit special names, especially those that occur in the pits of the buccal surfaces of the molars. These are quite different from the cavities that occur on the smooth surfaces of these teeth nearer their necks, both in fact and in the results of the filling. These should be called, *buccal pit cavities*, and distinguished from buccal cavities.

It is obvious so long as the names of the surfaces of the teeth differ among writers, the cavity names will be different also, leading to confusion that is very annoying to students. This appears again in any descriptions that are undertaken of the superficial extent of cavities, in the names of cavity walls, in the names applied to fillings, in describing the direction of cutting in excavating, in the direction of the application of force in condensing fillings, and in various other expressions in operative dentistry. Taking the total of the use of these words in anatomy and operative dentistry that are now to be found in dental literature they make up about five thousand distinct technical expressions in which some one or more of these words form a part; and yet the principles of their use are so simple as to be effectively covered by a few simple rules. * * *

Prior to 1859, the words *inner*, *outer*, *external*, *internal*, *back side*, *front side*, *anterior*, *posterior*, and others in English, and their equivalents in the German and French, were used in irregular fashion. Their use is still continued unfortunately, by a considerable number of dentists, in all three of the languages named, causing great confusion to readers and especially to students. Therefore there is the strongest incentive to strict regularity in the use of these important terms, and to the avoidance of the intermingling of other terms, indefinite in their use, with these, or of their use in places they should occupy.

Of these, the name of that surface which John Hunter called the *grinding* surface, may be regarded as in dispute, among dentists. The great number of names that have been applied to this surface in the different languages, and in each language, is sufficient evidence of dissatisfaction.

We find grinding surface, occluding surface, coronal surface, medial surface, kaufläche, kaulbene, kauseite, mahlfläche, face triturante, face coronale, face libre, face superieure, for the lower molars and bicuspids, and face inferieure, for the upper molars and bicuspids. If we consult other writers we will find still further duplications.

It is now required that the name of this surface shall have the adjective form ending in *al* agreeing with the other surface names.

It is proposed now to derive an adjective from the Latin word *occludo*. The anglecised adjective would be *occlusal*, agreeing in ending with labial, lingual, and the others; and may also take the syllable *ly*, becoming an adverb of direction. This addition completes the list of names of the surfaces of the teeth in adjectives ending in *al* and taking the syllable *ly* as adverbs of direction, and makes all of this very important portion of the nomenclature perfectly regular in form. The uses of the word may be illustrated thus:

The *occluding frame* is for arranging the *occlusion* of artificial teeth, or so adjusting the *occlusal* surfaces of the upper and lower teeth that they will *occlude* properly. In the molar teeth we have many *occlusal* cavities, and *occluso*-buccal, or *occluso*-lingual cavities. Often the *occluso*-buccal cavities are formed by the extension of a buccal decay *occlusally* until the *occlusal* enamel breaks down. Disto- and mesio-*occlusal* cavities are formed in like manner.

This makes a usage list that is characteristic of the surface of the tooth, which the word occlusal designates, standing, as it does, centrally to the crown of the tooth.

The adjective *morsal*, derived from the Latin word *mordeo*, to bite, has recently been proposed by the editor of the *Cosmos* to take the place of the word occluding, and other words for the designation of this surface. In two respects this word is more applicable than any previously proposed, while its derivation is on the same plane as that of occlusal. *Morsal* would mean the biting surface, while *occlusal* means the closing surface or the surface that shuts against and effects a closure or occlusion. The word *morsal* also has the advantage of brevity, it being one syllable shorter than occlusal.

The word *morsal* also has the disadvantage of being derived from a Latin word that is not domiciled in the modern languages in the original Latin meaning, certainly not in English. The words derived from it found in English dictionaries are mostly little used, and when used, are used in a sense that hardly suggests the meaning of the word from which they are derived. Thus: *mordant* is a fixative for a dye stuff; *mordacious*, literally given to biting, but used figuratively, meaning sarcastic, severe, scathing; *mordication*, corroding, corrosion, etc.

The word *morsel*, a bit, or a bite of food, is the only word derived from *mordeo* which, in modern usage, reflects the meaning of the Latin root. The word has the objection of being practically entirely new.

Morsal has not the advantage of the variety of inflection of occlusion, occluding, occlusal, etc., and its use could not displace all of these forms of the word from our nomenclature. Its adoption would, therefore, be only for a part of its uses of the word occlusion, and would really be adding another word to the list of technical terms.

The word *proximate* is a class term which is replaced by the terms mesial and distal when a surface of a particular tooth is indicated. We may speak of the proximate surface of a tooth, of the teeth, or of the proximate surfaces of any particular class of teeth, as the proximate surfaces of the bicuspids. Several forms of the word have appeared and are now used without much discrimination. These are, proximal, approximal and approximate. Of these, approximal was introduced by Dr. James White, late editor of the *Cosmos*, and all, with a few exceptions, of the communications to that influential journal have been made to conform to it by the editor. Dr. White's reasons for the introduction of the word will be found in the *Cosmos*, together with some communications in regard to it, in the February and March numbers of 1890, which is the date of the beginning of its use. Before that time the editor of the *Cosmos* had used the word proximate in its pages. The change made no improvement. The addition of the syllable *ap* adds nothing to the usefulness of the word, and is objectionable in that it renders it longer and more cumbersome. The principal reason for its addition was that it made the word different in form from the word used in a similar but slightly different sense by botanists, which is not considered a valid reason for a change of form.

The addition of the syllable *ap* practically destroys the word for all of those uses in which prefixes play a part, or for the compounding of this with other words. This is illustrated by the compounds inter-proximate, as inter-proximate space, inter-proximate contact, inter-proximate gingivæ, inter-proximate abrasion, inter-proximate lodgments, and various compound phrases that may now be used, or may become useful in the future. The addition of the syllable is contrary to a rule that should always be observed in the selection of technical words where two or more are available. This rule is: When two or more words are available for use in a given sense the choice should fall on that word which gives the greatest range of inflectional and compound forms.

It is a wrong principle to use a word for one purpose and a totally different word for a closely similar purpose when an inflected word, or a word admitting a prefix, will answer the purposes as perfectly.

This is illustrated by approximate *surface* and *interdental space* instead of *proximate surface* and *interproximate space.* Such a course simplifies the nomenclature and renders it more compact. * * *

In describing the superficial extent of cavities use no words indicating direction or position upon the teeth, except the names of the surfaces, the adverbs derived from those names, the divisions of the surfaces into thirds, or the anatomical names of parts or surface markings of the teeth, as the lobes, cusps, angles, grooves, pits, etc.

Example. The lower second molar has a distal cavity. It extends lingually fully to the disto-lingual angle, and buccally it extends past the disto-buccal angle, invading a small part of the distal third of the buccal surface. Occlusally there is still a strong enamel supported by a portion of sound dentine. Gingivally the cavity extends to the gingival line across the whole extent of the distal surface.

Instead of the adverb ending in *ly* used in this example, such phrases as in the lingual direction may be used, though the use of the adverb is the more direct mode of speech and is generally to be preferred. In no case should the terms outer side, inner side, backward, forward and the like be used. Terms of this kind have been much used in the past and have always given trouble on account of their ambiguity. The term pit cavity has been much used in the past for designating small cavities starting in the pits, and should be continued. But the use of the grooves, ridges, lobes and other surface markings for the designation of particular points on the surface of the teeth, have never been much in vogue, though admirably fitted for the purpose.

If so much can be said on a branch of this subject which merely includes the naming of cavities, it gives us an idea of the immensity of the entire subject and as has been appropriately said: Scientific truth has a right to a safe lodgment, a place of safety—the best safe deposit vault is accurately defined words."

A Cursory Survey of Some of the Papers Presented to the Columbian Dental Congress.*

By C. E. Bentley, D. D. S.

Over three months have passed and still we linger in the refulgent splendors of the Columbian Dental Congress. The delightful daring of this undertaking at once excited the wonder of the more fossilized bulwarks of conventionalism, and the keen admiration of the youthful and aggressive.

To suddenly cut loose from the moorings which securely held us and to push from the comparatively safe lagoons into the dangerous seas of speculation, was no small undertaking; yet this was done, and the flag of victory was perched high upon our ships as we sailed into the port of success.

The writer's wildest conceit would not justify an effort to encompass the whole territory covered by the congress, hence he will only touch it at points, leaving a vast amount of virgin soil to others who are disposed to explore its benefactions. Many worthy efforts, for want of time and space, will have to be satisfied with the applause which the writer most generously bestows--the call before the curtain being a compliment reserved for our guests and a few local celebrities to which all are willing to contribute.

To the sessions of the whole congress were assigned papers by men whose names and reputation fully justified the high confidence in which they are held in our profession. Of the five excellent papers read, the writer will take a passing glance at two, and that by reason of their innovating tendencies, namely: "Concerning Various Methods Advocated for Obviating the Necessity of Extracting Devitalized Tooth Pulps," by Dr. W. D. Miller, of Berlin; and "Among the Ancient Hawaiians," by Dr. J. M. Whitney, Honolulu, H. I. Dr. Miller, in short, proposed to simplify the tedious method of filling roots of devitalized teeth by substituting for the materials usually used for that purpose, sterilized pulp substance. He would impregnate the process of the pulp with a powerful antiseptic—thymol and bichloride of mercury, equal parts preferred—cover with gold and cement and fill *ad lib.* His method had been employed in the Berlin University in over 200 cases, and covering a period of three years, with but one reported failure.

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*Read before the Chicago Dental Society, January 2, 1894.

The writer is fully cognizant of the import of any opposition, from him, to so eminent a scientist. The essayist's case is weakened by virtue of the fact that he has no data to support his opposition. He is not cut on the bias of an original investigator, and original investigation is necessary to disprove the soundness of the above theory; but nevertheless, the writer is heretic enough to say he believes the above to be a dangerous method.

The danger of this method lies in the possibility of subsequent infection and decomposition of the pulp remnants. Unless the antiseptic's potency is unlimited this infection is most likely to occur. Dr. Miller gives us no light upon this phase of the subject. The media of infection can be through the apices of the roots, a leak in a faulty filling, or the ingress of bacteria through a new area of decay. If this does occur, and the solubility of the antiseptic ensues—against which he does not assure us—woe to the individual thus situated, and woe to the dentist whose patron he is.

Aside from this what assurances can Dr. Miller give the profession as to its permeability, absence of any irritating action upon the pericementum, and guarantee against the ultimate dissipation of the antiseptic? If it will ultimately dissolve we will have trouble. If it does not thoroughly permeate the pulp in the roots we may reasonably expect to receive due notification. If it has any irritating action upon the pericementum, who can predicate its portent? The more arduous but conscientious method in America, in the writer's opinion, will not be greatly disturbed by the one espoused by our friend from Berlin.

By far the most interesting paper of the aggregated sections, to your essayist, was the one by Dr. J. M. Whitney, upon the Ancient Hawaiians. It was a revelation, and if true with one fell swoop shattered many theories that have obtained unrefuted for years. In the main it has been the teachings of modern writers that dental caries, unerupted third molars, dental irregularities, etc., etc., were the products of modern civilization, the intermarriage of races, degeneracy, and a score of other causes around which many theories have been woven.

Dr. Whitney enjoys the exceptional privilege of residing with a people who for thousands of years have lived among themselves —have intermarried—been isolated from the outside world and led a simple life. Here indeed is a rare opportunity for the careful student to accumulate data of vital importance to the above claims.

That Dr. Whitney is a careful student is to be determined. That he has taken advantage of his opportunities was made evident in his paper. He has studied the customs and habits of the living, and the history and crania of the dead. His conclusions are diametrically opposed to the deductions of our modern teachings. The results of his study upon the crania of this people and the testimony offered by the crania presented to the congress seemed to justify his conclusions.

The crania exhibited were said to be more than 1,400 years old, upon which were to be found evidences of all the diseases claimed for the children of a more modern civilization, pyorrhœa, caries, unerupted wisdom teeth, abscesses, diseased antra, all these, as silent witnesses against modern pedantry. If these data be correct and conclusions sound, what is to become of the literature upon these subjects which has its reason for existence grounded in the claims Dr. Whitney refutes? With one dramatic stroke he has swept numberless books from our shelves and in their stead remains one contribution which must stand until time's tribunal shall have passed judgment upon its worthiness or unworthiness.

ANATOMY AND HISTOLOGY SECTION.

By far the most novel paper presented to this section was the one by Dr. Bonwill, under the caption, "What has Dentistry to Demonstrate Against the Hypothesis of Organic Evolution?" The novelty of this paper lay in its claims and its misinterpretation of the Darwinian theory of evolution. The author enunciated thirteen propositions more or less phenomenal to which we will not ask your attention in detail, but will cite you to a few of the more startling. Says his sixth proposition: "I claim not only to have discovered the laws by which organizations are made, but have perfected the drawings from these laws by which any skilled artisan can reproduce and duplicate artificially what is here demonstrated." In his seventh proposition he assails the law of progression and retrogression in the following: "If the human mind cannot conceive of a fitter organization than is here demonstrated and produce it from the laws and principles of evolution, then there can be no progression to a higher state that can form a basis of argument for the evolutionist."

But the pivotal proposition is his ninth, which says: "It is claimed that natural selection could only have reproduced a preëxisting organ or organism or previous type, and could add no new organ or alter the form of the preëxisting one to higher efficiency."

That this gentleman has not read Darwin, Spencer or Wallace, or that he has misinterpreted them is apparent to any one who has given any thought to the subject. His interpretation of natural selection as evidenced in the proposition just read (the ninth) is full of error. Darwin, Spencer and Wallace never claimed for natural selection what Dr. Bonwill claims for it in his ninth proposition. On the contrary they have claimed just the opposite. Natural selection does modify a preëxisting organ, organism or previous type, so that in a myriad of years the modified organ bears but little resemblance to its parent. In the vegetable and animal kingdoms this is everywhere apparent. It is the one inexorable law in the struggle for existence that preserves the species, modifies organisms and causes the fittest to survive. Dr. Bonwill has read of conscious selection, which is a vastly different operative law from unconscious or natural selection.

The discussion of this paper by Dr. J. J. R. Patrick was a cyclonic effort, which swept everything before it. It was a scathing refutation of all the essayist claimed. It showed that he, Dr. Patrick, was familiar with the teachings of Darwin and his contemporaries, and that his interpretations were in accord with the understandings of the students of the scientist, Charles Darwin.

We cannot refrain from quoting his last paragraph. He says:

"In conclusion, I wish to say that while some of the apostles and followers of Darwin have unfortunately exceeded their master, and carried his theory beyond anything he ever dreamt of, there is, on the other hand, a set of thinkers and writers who have never read Darwin thoroughly. Men write against Darwin who never read him, and who could not possibly do it. I would not say that any man could be scoundrel enough to come before an intelligent body of men, and talk upon a subject of that character, without having first thoroughly posted himself on the negative side of the question. I have known very able and educated men, who, when I pushed them to the corner, said they had not read Darwin, but they had read of him. My advice is, let Darwin alone. He is beyond your reach, and ever will be. I do not care what his doctrines may have been, nor do I know a more modest man, a more sincere thinker, a clearer thinker. He has captivated the greatest brains in civilization in every department of natural science, and it becomes us to simply do him honor, and leave his doctrines alone."

It is to be regretted that the discussion had so much of the verbal pugilistic element about it and was not productive of more fruitful results.

It was a subject in which a large element of the profession are interested and had cause to believe they would receive much light from those who had given years to its study. Altogether the paper and discussion were the most sensational of the congress.

PATHOLOGY AND BACTERIOLOGY SECTION.

It took a woman to carry off the laurels in this section. Excellent papers were presented by others, but Dr. Annie Fulton Reynolds' paper upon "Adenoid Growths and Other Diseases Incident to Primary Dentition," is entitled to especial consideration.

The paper claimed that the predisposing cause of infantile convulsions instead of being difficult dentition was a rachitical tendency superinduced possibly by an inflamed and tender gum. To adenoid growths she attributed the cause of many ills with which children are afflicted.

She says: "That the influence of nasal obstructions is the causation not only of morbid conditions of the whole respiratory tract and middle ear, but also of pathological changes in other and remote organs of the body, is grounded on the firm foundation of every day clinical fact and experience." She classifies the symptoms of adenoids under five heads: respiration, secretions, speech, hearing, and general condition. Her treatment is early removal. We applaud this woman because she has indicated that a new territory may be opened to the dental practitioner in his sphere of usefulness that to him, heretofore, has been unexplored. We handle and care for the mouths of these young patients; why not add to our usefulness by cultivating the line of work she has indicated? We commend her paper to your serious consideration, and know that you will agree with the writer when he says we were better dentists for having heard her.

It was pathetic that there either was not enough of interest or else too few specialists in chemistry or metallurgy to make the section bearing that name a success. These two sciences touch our profession at so many points, and the knowledge of them is so essential to our scientific equipment that it was disappointing and humiliating to the loyal dentist.

THERAPEUTICS AND MATERIA MEDICA SECTION.

From a numerical standpoint this was the most popular section of the congress. From a standpoint of information it yielded the least. It is easy to account for its popularity. The great mass of the profession are greedy for any information that will render their operations less painful, and are in search of any new drug or set of drugs that will soften the asperity of our present dilemma in the treatment of some diseases with which we have to contend. The well informed dentist keeps apace with the march of progress in his application of drugs and had reason to expect something of permanent worth in this aggregation of representative men, but as already alluded to, our storehouse of knowledge upon these subjects was not disturbed by the addition of anything lasting. Cocaine as a local anæsthetic for the extraction of teeth dominated the section. Absolutely nothing new upon obtunding the sensibility of dentine was given, and the treatment of pyorrhœa alveolaris, as espoused by Dr. Caracatsanis, from Athens, Greece, must be relegated to the category of overtreatment. Has the profession outread itself upon things therapeutic? Or is it drifting in the direction in which the medical profession seems to be, namely, the dependence—outside of a very few drugs—upon the *vis medicatrix naturae*—aided by common sense adjustments, such as changes of climate, exercise, rest, diet, water, etc., etc., to meet the exigencies of each case?

Dr. Baruch, of New York City, read a paper recently before the New York Medical Society in which he positively says: "With the exception of mercury, iodide of potassium, quinine and salicylic acid, there is not a single medicinal agent which may be regarded as actually curative in the many diseases we as physicians are called upon to treat." Drs. Jacobi, A. Loomis and G. Peabody corroborated his statements. Aside from anodynes, which are equivalent to the hypodermic syringe in the physician's hands, and a few disinfectants for reaching obscure places to which our instruments cannot conveniently go, our use for drugs is becoming very limited. In the writer's opinion, the treatment of pyorrhœa must sooner or later be of a surgical nature pure and simple. A pus pocket accompanied by denuded bone and a foreign substance indicates drainage, removal of foreign substance and carious bone. This done the *vis medicatrix naturæ* does the rest and does it better without interference on our part. To treat the cause and not the effects is as much a desideratum to be hoped for in dentistry as medicine. Thus we say that Dr. Caracatsanis' recommendation is one of overtreatment. The future congresses, the writer predicts, will contribute but little more to the therapeutic side than this one, for the reason we have indicated, which in the writer's opinion is good sense and good science.

DENTAL AND ORAL SURGERY.

Three very interesting papers were presented to this section by Drs. M. H. Cryer, T. W. Brophy and L. Ottofy. Time will permit but a hasty glance at two, Dr. Cryer's and Dr. Brophy's.

Dr. Cryer's paper "The Surgical Engine and Its Uses,' bristled with ingenuity and originality. The limitations of his engine are not bounded by dentistry but seem fitted to replace the chisel, mallet and trephine of the general surgeon.

It seems to have embodied all the required elements of success and the profession heartily applaud his creation. His neurotome as well is a new device for operations upon nerve structure that seems destined to make for itself an important place in the list of inventions.

Dr. T. W. Brophy's paper upon "Surgical Treatment of Palatal Defects," was a radical and daring innovation, which entitled him to the applause of the entire profession. While known to a few it was one of the surprises of the congress. It would be an infringement upon the courtesies of the occasion to speak in detail of this paper, and as you doubtless heard or read it, it would be unnecessary. Dr. Brophy's radicalism lies in early operation to close an open palate, a severance of the bone at the malar processes, if necessary, so as to enable the previously scarified parts to unite, held securely in place by a lead button, through which are strung suitable wire sutures which, when twisted, hold the parts in apposition securely. We applaud, because this is new. We admire, because it is daring. We glorify, because it is successful and he is a Chicagoan.

Dr. Brophy is entitled to the thanks of his profession for his assiduous application to this branch of dentistry and the excellent results he has obtained.

OPERATIVE DENTISTRY.

By far the most interesting and instructive paper of this section was the one by Dr. Emil Schreier, of Vienna, Austria, upon the "Treatment of Infected Root Canals with Kalium-Natrium." You are familiar with its detail and the claims for it. By introducing the compound into a putrescent pulp canal upon a nerve broach it is claimed to disinfect and saponify its contents, which can be washed out with any solvent at the same sitting, using your discretion as to when the root shall be filled.

In the discussion testimony was offered to support the claims of its author. At the clinic he demonstrated it upon the living subject to the satisfaction of his audience. Since his departure, gentlemen upon whose word we can rely have used it with satisfactory results. What further testimony is needed to commend it to our serious consideration? The writer regards this innovation as an epoch in the progress of root treatment. If all be true that is claimed for this creation, Dr. Schreier has immortalized himself to the plodding, everyday dentist. Again, to be consistent with utterances made in the early part of this paper, if this treatment upon sufficient investigation proves sound, what will become of the many drugs that adorn our costly cabinets of to-day?

PROTHESIS AND ORTHODONTIA.

Drs. V. H. Jackson and C. S. Case were the electric lights of this section.

Dr. Jackson's paper entitled "A Method of Constructing Spring Appliances for Correcting Irregularities," was a masterly effort of ingenuity. He claimed to be able to correct most irregularities with a movable appliance constructed of spring wiring material. His diagrams were evidences of the painstaking and conscientious dentist that he is. Altogether it was one of the commendable efforts of the congress.

"Some Principles Governing the Development of Facial Contours in the practice of Orthodontia," was the caption of a paper by Dr. Case.

That this paper excited admiration and favorable comment you know. It was unique and novel. His models were the elegant demonstrators of the principles of his paper. They gave evidence of the ingenuity and creative ability of their author. They, with the paper, demonstrated the possibilities of a new specialty to the profession of dentistry. All praise for its author. The profession will applaud him and should give material encouragement to his further pursuance in this subject.

The personnel of the congress could not have been other than gratifying to its projectors.

The modest impartial scientist seeking for new data, the sage philosopher compiling his facts and deducting his conclusions, the omnipresent inventor seeking new mechanical principles and lauding his own, the "Old Practitioner" whose conservatism was hourly shocked, the silent and greedy student—a spectator—separating the wheat from the tares, the suave, urbane foreigner, with the un-get-at-able name, all united with loyal impulse to make the meeting, as far as lay within their power, the most memorable within the history of the profession.

And what of its portent? He is but a superficial observer—hide-bound in his own bigotry—who will venture to compass its possibilities.

The promotors of the congress need no words of praise from the writer as an evidence of appreciation of their efforts. The results with a thousand tongues sing their glory. All honor to them. May the achievement, by these promotors be an inspiration to those who attended the Columbian Dental Congress.

A Few Considerations In Surgery for the Dentist.

By Garrett Newkirk, M. D., Chicago.

[SECOND PAPER. CONTINUED FROM THE JANUARY REVIEW, PAGE 6.]

Septic dangers in dental practice are three-fold, all relating to soft tissues: First, to those about the teeth, or in any part of the mouth of the patient; second, to the dental pulp, living or dead, within the tooth; third, to the flesh of the dentist himself.

So far as dental operations are strictly confined to the cutting of enamel and dentine in the preparation of cavities, and the filling of the same, so long as the instrument does not slip, and is not permitted to come in contact with soft tissues, the danger of infection from a point, though septic, could scarcely exist. It may not be a safe assumption that dentine could in no case be infected, but the chance would be exceedingly small.

But frequently it is not possible to avoid the contact of instruments with soft tissues, especially those used at the gingival margins, or for the removal of tartar, or preparation of roots for crowns. But the greatest care should be exercised. We should ever seek to avoid the wounding of soft tissues in dental operations. There is too little attention paid to this point; in fact, many operators seem to be utterly indifferent to the matter. They work away upon a tooth in the mouth with no more regard for its surroundings than if it were imbedded in wood or plaster; and this is notably true in the finishing of fillings with strips and disks.

When an instrument slips from the control of the operator, it is usually with force sufficient to produce a wound, it may be a cut, a puncture, an abrasion, or but a simple scratch, sufficient in any case to innoculate the tissue with whatever infective poison the instrument may carry.

Were it not that the wound usually bleeds in this highly vascular region so freely as to wash out foreign matter, this being followed by the formation of a protective clot, cases of infection in practice would be far more numerous than they are. It is easy to see, in this connection, why a simple scratch or abrasion of surface may be more dangerous than a cut. The man who vaccinates you is careful not to make a bleeding wound, but merely to expose an absorbent surface for the infectious matter; for vaccine is a disease, and the matter employed is an infective poison, used to prevent the action of a greater poison and an infinitely worse disease.

The poisons most to be dreaded surgically, so far as known, are those of septicæmia (abscess producing) diphtheretic, perhaps gonorrhœal, and worst of all, unmistakably, the syphilitic.

There is also an affection characterized by swellings, sometimes amounting to dangerous tumefaction, without suppuration, which has been named "Infectious œdema." It occurs not infrequently in the mouth and other parts of the face.

The dangers to the patient pertain also to the operator. The septic instrument is a menace to him. There is not a surgeon who has not this fear and dread for himself. There are few indeed who have not at some period of their careers been in imminent peril from the prick of an infected instrument, or other contact of poison with a broken surface of the skin; and some have lost their lives.

It has not been the object of the author to write an exhaustive paper on these subjects, but simply to present, as the title indicates, a "few considerations." Those to follow will be divided into three classes:

First, precautions against the making of wounds, and all sources of possible infection.

Second, immediate treatment of wounds or other possibly infected places.

Third, after treatment in cases of known or suspected infection.

Preliminary to the above named considerations, however, the surgeon dentist should provide himself with a sufficient armament, instrumental and medicinal. These agents need not be numerous. A few, well understood and applied, are better than a multitude.

INSTRUMENTS.

Aside from strictly dental instruments he should possess something similar to a surgeon's pocket case, with instruments carefully selected for his own special needs. There should be at least:

1 small blade, straight bistoury.
1 small blade, curved bistoury.
1 probe pointed, curved bistoury.
1 fine silver probe.
2 groved exploring needles.
1 grooved director.
1 tenaculum.
2 small curved ligature needles.
1 artery forceps.
1 thermometer.
2 steel probes, (1 spring tempered, 1 flexible).

There should be also in case or elsewhere, one or two extra large engine burs, which he can obtain only by special order; and large "spoon" excavators or small gouges, for operations upon the alveolar process.

It is best perhaps to dispense with the *porte-caustique*, and arrange for keeping one's nitrate of silver eleswhere. Sooner or later the presence of this agent will blacken and disfigure everything near it in the case.

A happy scheme, I think, is the one suggested by Dr. Black, who keeps the arg. nit. in powder, and applies by means of a wooden toothpick. The wood point, made smaller or larger as the case may be, is moistened with water, dipped in the powder and applied. The stick is then thrown away and there is nothing remaining to blacken one's instruments, napkins or fingers.

I would think that the winding of a shred of cotton upon the point might make the application more pleasant and less irritating, mechanically, to the patient. I have spoken of the nitrate in this connection, because it has so long occupied a place with the instruments of the surgeon's case.

MEDICINAL ARMAMENT.

1. Distilled (or boiled) water.
2. Alcohol.
3. Bichloride of mercury *tablets* for making solutions fresh as wanted.
4. Oil of cassia emulsion—one or two drops of oil to the ounce of water—to be shaken for use.
5. *Iodoform* (or what is probably as good and a more agreeable substitute, *boracic acid*, with a drop of oil cassia to each ounce, incorporated in mortar).
6. Oil cassia simple.
7. Black's "1, 2, 3"—

Ol. cassia	1
Carbolic acid (dissolved crystals)	2
Ol. wintergreen	3

or some similar mixture.

8. Sterilized gauze.
9. Sterilized cotton.
10. Sterilized ligatures.
11. Adhesive plaster (1 rubber, rolled, two court, thin).
12. Peroxide of hydrogen. Eight, nine, and ten should be kept in corked bottles.

This list is presented, not arbitrarily, nor as being complete, but representing a good armament, offensive and defensive, for surgical purposes.

To return to our propositions.

First. *Precautions against the making of wounds, and all sources of possible infection.*

It ought to go without saying that all instruments which have been liable to infection should be made aseptic before using on another patient, or even the same patient. The means of this has been so often discussed, and so recently, that it would seem uncalled for to dwell at large upon the subject. It matters not so much by what method, *if it is done.* In the January number of the Review, on the 10th, 25th, and succeeding pages, a report will be found of the latest discussion of the matter by members of the Chicago Dental Society. Nevertheless, there are a few points in this connection liable to be lost sight of. The ground of safety is not covered by mere medication, however efficient. It is of little value that an instrument be cleaned and then laid upon a bracket the cloth cover of which is spotted with the accumulated filth of months or years. If a dentist cannot afford one or two dozen clean napkins a week on which to place his instruments he would better quit business or economize on tobacco.

Bill Nye once had a dog which he named "Entomologist." because he had such a fine assortment of insects. There is many a dentist who might similarly name his bracket "Incubator," for certainly if the cover were released from the glue it would possess life enough to crawl out doors, where it properly belongs.

Remarks *apropos* might be made likewise upon the coats some dentists wear, because they no not "*show dirt!!*" Something might also be said of the apparent inconsistency of extravagance in the use of bichloride, lysol, etc., and careful economy as to soap, nail-brushes and hot water. Another thing which needs attention and *emphasis* is this: Whatever is used for the final wiping of instruments should not be used again. It should go to the waste basket or fire. So long as a yard of clean, bleached muslin can be bought for six cents, and cut into eighty-one blocks four inches square, each of which may be used once and thrown away, there is no excuse for using a mouth napkin twice, or a piece of chamois skin till it resembles a blotting pad. What is the use of being so careful to save up filth ?

Again, where is the harm of partially cleansing the mouth of a patient before operation, or in thoroughly cleansing the teeth enclosed by the rubber dam to prevent the infection of instruments, materials, a prepared cavity, or the dental pulp. The last is easily done with alcohol, to which a little oil of cinnamon may be added on cotton. Could anything be more sensible and proper ? Yet how many do it ?

We have seen that the hospital surgeon and his attendants seek to be thorough in *all* things that have a relation to antisepsis. Half way work is little better than no work. The gums are highly vascular, there are frequently abraded or broken surfaces at their festoons. The rubber dam needs looking after. No one who has the least idea of antisepsis and a due regard for his patients, will use the same piece for different mouths. New dam should be washed. Even though it may carry no serious danger it often aggravates an ulcer or "cold" sore, and frequently has a very disagreeable odor. For washing, it is little trouble to drop a tablet of bichloride and a few drops of cologne or cinnamon essence into the water used, thus making the dam aseptic and safe for contact with mucous membrane and much less disagreeable to the patient.

[TO BE CONTINUED.]

PRESIDENT'S ANNUAL ADDRESS.*

BY C. H. SIPPEL, B. SC., D. D. S., CHICAGO.

Ladies and Gentlemen:

I suppose there was a time in the gloom of antiquity when our ancestors chiefly subsisted on wild fruits, berries and nuts, and I take it for granted that their first efforts were in the direction of improving their culinary condition. The voice of hunger was the loudest and the demands for garments and shelter came next. By degrees they discovered how to obtain and improve their food. I suppose one member of the family accidentally discovered the superiority of a certain root when grown in loose soil with plenty of sunshine; over the same plant when grown in the precarious way of wild nature. Another invented a rude contrivance with which to catch game; while some one else constructed a web for capturing fish by the ebb and flow of the tide.

This marked the beginning of the "division of labor," and as man gradually emerged from the darkness of barbarism, and the sunlight of civilization fell upon his brow, labor divided and subdivided itself into an infinite number of branches. This gave us a Michael Angelo in art, an Aristotle and Hamilton in philosophy, an Agassiz, Kepler and Humboldt in science, a Goethe and Shakespeare in literature, a Blackstone in law, a Gladstone and Blaine in statesmanship, and a Harris, Atkinson and Black in dentistry.

Dentistry was one of the later subdivisions. Although from the examination of prehistoric skulls we find that decay and all the dental diseases which burden modern life existed at that early time, as a rule nature had built up powerful and beautiful teeth that resisted the elements of decay and disease. The few teeth that unfortunately fell victims to decay were unceremoniously knocked out by the medicine man.

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*Read before the Hayden Dental Society, January 15, 1894.

However, as man advanced, his teeth began to weaken. Decay became prevalent. More and more teeth had to be sacrificed every year. And notwithstanding the fact that we have patients to-day whose main ambition seems to be to have their teeth extracted, yet some of our barbaric forefathers got tired of losing theirs and began to wonder whether there was not some way of preserving them.

This led to the development of ancient dentistry.

While antiquarians prove that the origin of dentistry is vastly remote, I do not believe—as some seem to think—that the birth of dentistry was coeval with that of medicine. The existence of dentistry as a distinct and separate vocation implies a higher stage of civilization than does that of either the medical, ecclesiastical or legal. I can conceive of the latter three having existed during the stone age. The priest or preacher could with the same degree of certainty proclaim his visionary ideas concerning the Creator or the hereafter that he does to-day. The lawyer, gifted with a gruff monosyllabic articulation, could in his feeble manner plead for what he believed to be right. The medicine man might do the best he could at conjuring a pain or healing a wound. But I can conceive of no man having practiced dentistry with any degree of success while using for his excavators crowbars of stone, or the horn of a reindeer for a nerve broach.

Neither have I implicit confidence in the accredited excellence of the gold fillings, crown and bridge work found in the mouths of mummies dug from the graveyards of antiquity. The conjectures that the dentistry of the ancients compared favorably with the dentistry of to-day are erroneous. No science could have developed to such perfection without a universal demand for it, and there was no such demand. Neither could the science of dentistry have reached such excellence in advance of all the other sciences. The various sciences and arts grow hand in hand. Each gives to and receives aid from the rest. Can you separate modern astronomy from the other advanced sciences—from advanced physics, chemistry, mathematics and mechanics? Could astronomy have made such vast strides of progress without Huyghen's pendulum or Napier's logarithms? What would we know about the satellites of Jupiter, the ring of Saturn, or Neptune traveling the distant boundaries of the solar system if the lenses of the Dutch optician, Metius, had not called into existence the telescope of Galileo? The other day a lady—an enthusiastic theosophist—told me that the ancients knew more about astronomy than our modern astronomers do, and became indignant because I did not believe it. She had studied Hindu history. I had not. Consequently I was too ignorant to argue with her on that subject and that settled the matter. Well, I suppose they had quite an easy time figuring eclipses, calculating orbits and recording the physical constitution of planets in hieroglyphics from which, she said, they were now transcribing and translating these great ancient attainments. Strange that the people who have the history of all these marvelous ancient achievements should allow us to make all the discoveries over again. It is a trifle curious that now and then they could not read from their history a scientific fact that we did not know anything about. I suppose before the fifth moon of Jupiter was discovered last winter, the ancients had been dead sure that he only had four satellites. Now, of course, they knew all the while that he had five. I read from reliable sources that in proportion as the history of the ancient nations becomes authentic, their astronomy, with the rest of their sciences, shrink into insignificant dimensions.

They tell me that the ancients had a better cement than we have. It is difficult for me to believe that, unless they knew more about chemistry than we do. The accident by which such a cement could have been discovered is too great.

Nearly all the ancient peoples to whom great skill in dentistry is attributed were intensely superstitious. The Egyptians worshiped divinities from the triad of Osiris, Isis and Horus down to their sacred apes and incarnated snakes. And according to Clements if any person killed a holy reptile through accident he was murdered by an infuriated mob. The Phœnicians offered to their wandering El innocent babes and beautiful maidens as sacrifices to avert public disasters. I believe the Japanese even to-day think it wicked to interfere with the will of God to the extent of saving a tooth which he desires to destroy. Now, where the fog of superstition was so dense, I do not believe they could see well enough to put in good gold fillings. The ancient Greeks, with the exception of Æsculapius and Hippocrates and the few followers they respectively had, believed disease to emanate from the anger of gods, and to appease that wrath was the cure. Imagine a dignified patient, with a growling toothache, sitting in a modern dental office, flattering a piece of wood or stone for the sake of obtaining relief. If I were traveling in a country where such profound theories of therapeutics prevailed, I do not think that I would stop to have any dentistry done. The Etrurians had an endless string of gods, from Tinia standing at the head, down to the countless number of nameless deities. Every one of these revealed his will in a different way and temples had to be erected for all of them. So I think that by the time these Etrurians got through building temples and watching these multifarious manifestations of wills, which was at that time more important than anything else, people could die with the toothache. They were attending to far more important business. When Darius invaded Greece, and Athens sent down to Sparta for aid, the Spartans replied that they had no time to defend their country just then, that they were too busily engaged conversing with the Oracles. The Etrurians were just as attentive to their celestials. And so I naturally conclude that by the time they got through erecting suitable cathedrals and watching volitions flying through the air at random, there was hardly enough time left to develop crown and bridge work to its modern perfection.

Such superstitions are not consistent with advanced dentistry, or any advanced science. When man calmly listens to truths from the secret lips of nature and lifts a science to the serene summit of high Olympus, his intellect cannot be vaulted by such superstition; his reason cannot be enslaved by such silly dogmas; his imagination must have infinite sway through the remotest limits of space. The dentistry of the ancients must of necessity have been in a primitive condition. But there seems to be a desire in the human heart to glorify the past. The American supplement to the Encyclopœdia Britannica says that the set of teeth constructed by Dr. John Greenwood for George Washington, was unequaled for neatness of execution. Concerning the veracity of that statement I leave every one who saw the teeth on exhibition at the World's Fair to judge for himself. Of course, they show skill considering the disadvantages under which Dr. Greenwood labored, but that is not the impression conveyed by the foregoing statement. There is a story told about Michael Angelo: It seems that in spite of the masterly achievements of the four great Italian artists—da Vinci, Raphael, Titian and himself—the people at that time did not think that their skill compared with that of ancient Phidias and Apelles. Angelo got tired of this and so he hewed out a beautiful statue, knocked off one of its arms, besmeared the rest of the statue with dirt and buried it where he suspected it would soon be found. When the statue was discovered people went wild with joy. Everybody extolled its merits and proclaimed it the most excellent specimen of ancient art yet found! While the excitement was at its height Angelo, much to the chagrin of the enthusiasts, stepped forth with the absent arm, which fitted perfectly in place, and claimed the honor of having executed the statue.

In its weakness the child of dentistry, prattling in the lap of the orient, was assassinated by the dagger of superstition. It was buried for many centuries, and resurrected by the hands of the new civilization. For a long time then it made no material progress. There was practically little advance till about thirty years ago when it received the impetus of dental societies. Since then its progress has been marvelous.

In my estimation dental societies have done more to elevate the profession than all other agencies.

Societies arouse a young man's ambition, and ambition is the sole inspiring impulse to self-improvement. Nothing but that burning, passionate desire to become an orator, made Demosthenes accomplish what he did on the forum. Nothing but earnest, craving aspirations changed the natural stupidity of Savonarola into such a fervent fire of eloquence that the whole of Europe was aroused. Nothing but the ardor of that irresistible ambition made possible the literary fame of Schiller and enabled him to write his masterpiece, the "Wallenstein."

Societies are reservoirs of energy and ambition, upon which the members may draw. They destroy petty jealousies, and bring the members together into a unity of purpose.

Our society, in its humble manner, is nobly doing its part. Though young in years, its reputation extends across the waters of the Atlantic, and papers read before it have been published in European journals. The year to which we have just said adieu has undoubtedly been its most successful and eventful one. We have had a good average attendance, some excellent papers and valuable discussions, and its list of membership has been increased by the addition of some illustrious names.

Its past has been progressive, its future depends upon the efforts of its members. Predictions are useless. But be its work great or humble, be its future brilliant or dim, one thing will always rise to its honor, and that is its name. It perpetuates the memory of one of the most exemplary characters in the history of our profession. No man was a more conspicuous factor in the elevation of modern dentistry than was Dr. Horace H. Hayden. His energy and genius helped to give it the impetus that characterizes its progress to-day.

Although Dr. Hayden's early educational advantages had been poor, his wonderful concentration of energy soon made him a marvel of intelligence. His proficiency in physiology and anatomy brought even the medical profession to his door begging for knowledge. He refused to lecture in medical schools unless he was introduced as a dentist. He received the honorary degree of Doctor of Medicine from two universities. He was one of the founders of the first two dental colleges, the editor of the first dental journal and the author of valuable theses on dentistry, medicine and geology. He was the embodiment of perseverance, investigation, fearless individuality and real intellectual greatness.

Few nobler and more progressive men have lived. As I stand amid the pleasant memories of the two years that I have been connected with this society and look into its future, I do not know what possibilities it holds in store for us. I do not know how brightly our society may shine, but I do know that there can never come to us a greater destiny, a more precious privilege, than that of having done honor to the name of Horace H. Hayden.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

Regular meeting, January 2, 1894, Dr. Garrett Newkirk, Second Vice President, in the chair.

The first paper read was by Dr. Louis Ottofy, entitled "What the Dental Congress Has Taught Us." Dr. C. E. Bentley followed with a paper on the same subject, after which both papers were discussed jointly.

Dr. Truman W. Brophy: I have been so overwhelmed this evening by the grandeur, the excellence of the two papers presented, that I feel absolutely incompetent to say anything in regard to them. I am not given to extravagant expression, but I must say that during my connection or membership in this society I do not think that I have ever before listened to two papers in one evening of a higher character than those to which we have just listened.

In regard to the first paper, it is more intended to be a matter for study than for discussion. There is no doubt in my mind that there is room for great improvement in our nomenclature. Whether I would exactly agree with some of the points discussed by the essayist I am not prepared to say, for the reason that I would like to give them further thought and attention. I will say at the outset, I did not know what Dr. Ottofy's paper was going to be until it was read. I supposed it was to be on the subject of "The Causes and Treatment of Fungous Gums," until a day or two ago he told me he had changed the subject to "Impressions of the World's Columbian Dental Congress." There are some old terms that have been employed so long that we in this generation will never rid ourselves of them. Proximal will always be used. The terms he has proposed may possibly in the next decade be used by younger practitioners, but those of us who are getting along a little in the afternoon of life will make use of the terms we have been taught until the end. But this does not by any means indicate that we should discourage the employment of terms which commend themselves to us as better than those we have been taught and which we now use.

As to the influence of the World's Columbian Dental Congress upon the dental profession, no man at this date can foresee, nor can we predict what it will be, for it is now still wrapped in mystery to most of us. Only men who have carefully read what has been published could present papers such as these to-night. While the papers have only had certain extracts made from those that have been published in the journals, I await with a good deal of interest the issuing of the official transactions of the Congress, and then we will not only have the papers published in full, but they will be illustrated as far as possible, and after reading the transactions within a year or so, as one of the essayists has remarked, we will then be able to come before the Society and intelligently state our impressions of the work of the Congress. Our position is a good deal like that of a person who attended the great Fair attempting to tell what the Fair was. He knows comparatively little about it compared with what he might know. So with the Dental Congress, meeting in so many sections, it was impossible for one man to know very much of what transpired in the various sections, except by reading extracts of papers as they have appeared in different journals.

In regard to the second paper read this evening, I rather think the essayist is correct on the general subject of the application of remedies to disease. There is one general principle that underlies everything in regard to the treatment of disease, and that is based upon a knowledge of the pathology of the part. What is the condition, and what is required to restore the part to a normal state? These are the two first questions that we should ask ourselves in coming in contact with disease. What ails this part? After answering that to himself satisfactorily, after making a careful examination, the practitioner should say, "What agents can I employ to restore the part to its normal condition?" When he has proceeded that far, he has accomplished the greater portion of his work. Not long since, in conversation with an old physician who had been engaged in the practice of medicine for something like forty-five years, he told a story that impressed me very much. He said some twenty years ago a student of his, who had been attending lectures at a medical college, came home and had at his tongue's end a great many remedies. He had carefully studied the subject of materia medica, and began to talk about all the things he had learned in college. The old gentleman listened to him very attentively; and then said that when a young man starts out to practice medicine he will have eight or ten remedies for every disease, but after he has practiced a number of years he will have perhaps one or two remedies for eight or ten diseases. This is true. When we start out we employ more remedies than we do later on in our practice. What is the condition, and what is required to bring it back to health? In the first place, cleanliness, which implies everything pertaining to antiseptic treatment. If we go to headquarters in antiseptic treatment we will use the bichloride of mercury. All other agents, so far as our present knowledge tells us, are secondary; less irritating, perhaps, but are lower down in the scale.

In regard to what Dr. Bentley has said with reference to the work of the sections of the Congress, I need not say anything, as I know very little about it except what I have read from the periodicals. I was, however, very favorably impressed with Dr. Schreier's paper on the application of substances that will saponify the contents of tooth canals, and thereby thoroughly cleanse them. I should say it is a good thing. I have not employed it yet, but presume I shall very soon. We have gentlemen here to-night who are experts in the application of remedies, and I hope we shall hear something from them on this particular point. I presume there are gentlemen here who have made use of this kalium-natrium in the treatment of pulpless teeth, or for the purpose of removing pulps that have been devitalized, and I think if we were to consider that paper carefully and it teachings, and if it is all that has been claimed for it, we will have an agent that we can rely on in the management of such cases.

I cannot indorse any treatment, no matter from whom it may proceed, for the filling of canals of teeth in which the apical foramina are not hermetically sealed. Drugs applied to canals—antiseptics, or anything for the purpose of sterilizing them will be insufficient unless these canals are thoroughly and perfectly closed so as to prevent the ingress of secretions or gases that may be followed by irritation of the pericementum and subsequent trouble in the form of general alveolar abscesses or affections of the maxillary bones. Leaving the canals open is, in my judgment, bad practice, no matter how potent the agent may be that is employed for the purpose of rendering them aseptic, for sooner or later, as a rule, where canals are left open, no matter if the pulp contents are all removed and the parts perfectly sterilized, there will be trouble such as I have stated. The canals must be thoroughly filled and sealed.

I am sorry, Mr. President, that I have not been able to present some further thoughts on these two valuable papers, but as I said at the outset I felt incompetent to take up the questions for thorough discussion.

Dr. Edmund Noyes: There are only a few things I will attempt to speak of, in a general way, rather than to enter into a special discussion of the papers, which were to me, as they must have been to all of you, exceedingly interesting.

One thing that we learned, it seems to me, by means of the Congress, and which is not a very pleasant one, is that a good many of the foreigners, who did not attend the meeting, appeared to consider themselves considerably better than we are, and they believed that there was no probability of a meeting of dentists being gotten together so far out in the wilds of America that would make it worth their while to come. · We learned also that the foreigners who did come appeared to be very pleasant and intelligent professional brethren.

There were, so far as I can remember or understand, very few things presented at the Congress which could be called entirely new. I want to say that I am under the disadvantage of not knowing what was said in the Congress, because it was not only impossible for one person to be in more than one section at a time, but I, unfortunately, was absent from all of the sections almost all of the time, being occupied in necessary committee work. In looking over the published proceedings, it is apparent that the abstracts of many of the papers must be seriously inadequate to represent the quality and excellence of what was probably contained in the papers, so that what has already been said in regard to the impossibility of measuring the character and value of the proceedings until a much later date is very true. A number of what appeared to be very important things, which were comparatively new, very recent in their publicity, received in the Congress a wider publication than they could receive in any other way for some time to come. That is true especially of the surgical operation performed by Dr. Brophy.

One of the valuable points consisted in the opportunity for the enunciation and comparison of the views of men from different parts of the world concerning the management of similar cases and the performance of similar operations. In that view of the case, the fact that many of the men appeared to be behind the times is not derogatory to the interest of the Congress, which served in many instances to express the standard of professional practice in different parts of the world at the present time.

The second paper (Dr. Bentley's) referred to an enunciation of the views contained in the paper by Dr. Whitney regarding the ancient Hawaiians. That is another contribution to a subject which is not new to many of us. It will be remembered by most of you that Dr. Patrick in a meeting of the Illinois State Society a good while ago, I cannot say how long, read a paper on "Civilization not the cause of dental decay," or a title similar to that, in which he cited observations of ancient skulls through a wide range of time and geography, including the mound builders of this country, and a good many of the skulls to be found in museums in various parts of the world, from which he drew the proposition, and apparently proved it beyond the possibility of cavil, that the diseases incident to the teeth and the jaws which we find to-day are not new, nor the result of civilization, but that, so far as can be determined by results permanent enough to be shown by the appearances of the teeth and jaws that have been preserved, all peoples, ancient or modern, civilized or savage, have been subject more or less, to the same oral diseases that are now prevalent.

Dr. Brophy: Mr. President, I rise to get the exact date of the paper published by Dr. Patrick, if possible, so that the stenographer can record it. It will serve as a reference for those who have not read or heard his paper.

Dr. Ottofy: Dr. Patrick's paper was published in 1882.

Dr. Noyes (resuming): I will attempt to say only a few words in regard to the subject of nomenclature, which was presented in the early part of the evening. One of the important things which the paper upon this subject in the Congress enunciated, or directed attention to, is the fact that our nomenclature must be always a matter of growth rather than of construction, and that the office of the profession in respect to it is not to prepare or construct a complete new nomenclature, but that whenever new words are proposed the proper ones shall be chosen and come into use rather than improper ones. It is impossible to bring a large number of words or new terms into general use in our profession very rapidly.

Dr. J. N. Crouse: The idea has come to me to-night, after listening to the papers, that if we could have short reviews of the various papers that were presented at the Congress and have them discussed by the different societies, we should gain much benefit as the result of the Congress. A large volume, such as will be published before long, containing the proceedings in full, is a laborious thing to wade through, but subject after subject can be taken up and discussed with profit at society meetings. If some one at the next meeting would review part of the work done in the sections and thus continue until all the work had been reviewed in this way, we would get a better idea of what the Congress did than in any other manner. Heretofore we have had some impressions of what the Congress was, but they were not in the line of the papers to-night.

The first paper which dealt with nomenclature can be studied with profit by all of us.

The paper of the second essayist pleased me very much. I was not familiar with the subject matter of the different papers, and it is quite a treat to know something about the papers that were read at the Congress, knowing as I do some of the men that read them. The paper of Dr. Whitney is of special interest to me. We attended college together, and you can rely on his accuracy. He is one of the most accurate men in the profession as to the statements he makes.

The criticism that the dental profession is deficient in chemistry and metallurgy is a just one. I dare say that there are not five men in the profession who can give us an accurate analysis of one of our amalgams. We have to go outside of the profession for this. I do not know more than one man in dentistry who claims to be able to assay an amalgam and tell the different ingredients in it and the proportions accurately. I think this is a line of study that our colleges ought to encourage more than they do, and make it more obligatory upon the profession to be chemists and metallurgists. I can think of nothing more to say than to commend the papers which have pleased me very much.

Dr. Ottofy: I wish to make the statement that in my paper there were no suggestions of my own as to the use of words or terms. The terms mentioned were proposed by the committee on nomenclature.

In regard to the use of words, the second speaker suggested that what we needed was growth. I think it would be far better to begin the other way and weed out useless terms and meaningless ones. Some still use the term "canine tooth," I would suggest that it be dropped. This compels us to take up the word "cuspid," which is the proper one.

In connection with the description of the surfaces of teeth, I hope that portion of the committee's report will be carefully read when it is printed, so that we can understand each other. There is one thing I did not introduce into the report, because I do not know how we stand in regard to the division of teeth into different parts. I believe the French are endeavoring to divide each surface into five parts. There is also an effort being made to divide it into three parts. Take the occlusal surface of a tooth and divide it into three parts each way and we will have nine sections, and if the crown of a tooth is divided into three sections in all directions, we would have twenty-seven sections of a tooth. Each of these sections can be distinctly located, so much so that it would be impossible for a man to make a mistake when he describes a cavity or filling, using the terms that will designate these separate parts.

Dr. Brophy: Bearing on this subject of nomenclature, I desire to ask a question. On two occasions in the Illinois State Dental Society, papers on this subject were presented by the late Professor Judd and by Dr. Kulp, of Davenport, Iowa, giving most exhaustively the names which, in their judgment, were indicated for the different surfaces of the teeth. I would like to ask Dr. Ottofy to tell us, if possible, the reason why those were not adopted?

Dr. Ottofy: The one by Dr. Judd I do not remember. In regard to the paper by Dr. Kulp, I do not know why any part of it was not used as I was not a member of the committee. As I understand it Dr. Kulp's ideas are radically different from those advanced by nearly all the other writers. His propositions are almost distinctively American, while other writers use the identical or similar terms already used in foreign languages.

I made the statement in the paper that it would require over 2,000 mental impressions to describe the different surfaces of the teeth. It seems an enormous number, but yet, if you remember, every time we speak of a tooth and the special surface of that tooth, we at once form a mental image of that section. If I say a lower right second molar, probably every one of you at this moment have a mental picture of that location of the jaw and of a tooth there. If I then say a left upper second bicuspid, your impression will be entirely different. Every tooth and every surface of the tooth can be perfectly described by the nomenclature to which I have referred. If by using it a speaker describes a filling or cavity, exactly the same mental picture will be made in every mind. We should educate our patients to use the proper terms. You frequently hear them speak of molars, incisors, but they still say "eye tooth." Dentists themselves are to blame for that. There are splendid opportunities for dentists to practice nomenclature on their patients when speaking with them in regard to cavities. Patients become interested, and you can just as well say "buccal cavity" as to say "a cavity on the side of the tooth."

Dr. Bentley: I have nothing further to add to my paper. I wish, however, to thank Dr. Noyes for the information that he has given us in reference to Dr. Patrick's paper, which antedates Dr. Whitney's, and about which I was not informed.

I was a little disappointed that there was not more discussion upon a certain part of the paper on which I laid emphasis, namely, that as the dental profession grows older there is a tendency to become more conservative in the use of drugs. I had hoped for a fuller discussion on this point by those who are eminently qualified to do so for the edification of the members present.

I desire to thank the gentlemen for their kind expressions of appreciation of my paper.

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WHAT THE PROFESSION OFFERS TO YOUNG MEN.

We frequently have applications from young men asking our advice as to the desirability of studying dentistry. These applications come from all sorts and conditions of individuals. There are those who have evidently studied the matter of selecting a calling somewhat carefully, and have decided that dentistry would be their forte; there are others who, having given the subject very little thought, have jumped to the conclusion that dentistry *might* be theirs. There are those who are favored with a good collegiate education (a limited number of these, more's the pity), and others who are so illiterate that the mere attempt to write a simple letter asking for advice involves a pitiable struggle amid a morass of misplaced verbs and adverbs that shows the writer beyond his depths at every turn. Others there are who, having failed at every thing else under the blue vault of heaven, have concluded that dentistry would about fit their caliber.

It is unfortunate that the impression seems to have gone abroad that dentistry is an easy thing to "pick up." In former days it used to be an axiom that if a certain son in the family circle showed not the slightest aptitude for any one particular pursuit—if, in short, he proved to be a dunderhead or an ass—the proper thing to do was to make a preacher of him. In all of the discussions relative to the question as to whether or not dentistry shall take rank beside other callings as a learned profession, we do not remember having seen any reference to this kind of connection between the dental chair and the pulpit, but we believe that a careful canvass of the situation would go far to prove that in this one particular, at least, dentistry is pushing the ministry uncomfortably close to the wall. The sentiment seems to prevail among a large majority of people—professional and nonprofessional—that there is comparatively little to learn about dentistry. A young man just out of school goes to his dentist to have his teeth filled, and the operation proceeds so smoothly and apparently with so little effort on the part of the operator, while the bill runs up so rapidly, that he is impressed with the desirability of practicing dentistry as a means of livelihood. The mere mechanical skill necessary for filling those teeth limits, in his mind, the requirements of a dentist. He does not stop to consider as to his qualifications for the successful practice of dentistry in all of its departments. He seldom asks what all has to be studied, but limits his inquiry to the uppermost thought in his mind: "How long does it take to get a diploma."

Many a young man—thanks to our present methods of education—has, after matriculating and entering a college, been bitterly disappointed on realizing what was really required of a dental graduate of to-day. Many of them have started to college with the impression that to learn a little handicraft was the sum total needed for graduation, and when they are confronted with the fact that in all of our reputable colleges a thorough course of instruction in physiology, chemistry, anatomy, materia medica, pathology, etc., is made compulsory, it proves an unpleasant surprise.

Ask of the erstwhile unsophisticated freshman after a few months' attendance at a good college if he finds the study of dentistry to agree with his previous conception of it. His decidedly characteristic reply will probably be after this fashion: "No, siree; dentistry ain't the dead easy snap I took it to be."

The fact is that dental education has changed so materially in recent years that those not intimately acquainted with the subject have little realization of what a dental college course means.

To make a successful practitioner who is quite up to the standard along all lines of modern dentistry, a man must be possessed of no common order of ability. He must be strong physically and mentally. He must possess good judgment, a clear brain, a keen eye, and he must be progressive in his nature. He must be studious of habit, cleanly of person, and capable of the most intense concentration on his work. He must combine the capability for the minutest attention to details, with the power to look at men and things from the broadest possible standpoint of humanitarianism. Above all things he must have mechanical skill and artistic taste of the highest order.

And, looking at it from this point of view, we are often tempted to ask, if after all, the results are adequate to the requirements? Surely not, if we consider the question merely in the phase of its material returns. A man of the caliber we have just indicated can accomplish more in a financial way in other pursuits. He can win more fame in law, greater reputation in medicine, and can pulsate in closer sympathy with the great throbbing heart of humanity if he be a minister. We have heard a prominent and thoughtful member of the dental profession—one whose judgment is recognized to be good—make the positive assertion that he never yet had taken a young man to study dentistry with him and that he never would. His argument was that in order to make a creditable dentist a man must be possessed of a superior order of body and brain, and that he would take no student who did not give promise of extraordinary ability. If a young man applied to him with the necessary qualifications, he felt in duty bound to tell him that his abilities would count for more in some other calling.

And yet, while we have apparently given countenance to this opinion, we are in no wise inclined to admit that the last word has been said on the opposite side of the case. There assuredly is in dentistry a field for the very type of young men we have indicated. Money is not the only desideratum in this world—the present predominant commercial spirit to the contrary notwithstanding. Even in a financial way dentistry will be more profitable in the future than it has in the past, when people are properly educated to an appreciation of its benefits. If dentists, as the development of the profession goes on, are not adequately remunerated for their services it will be largely their own fault.

But we lack space to say all of the good things that might be said of dentistry and must content ourselves for the present with offering a warm welcome to every young man who honestly believes he would do credit to dentistry, and who is willing to work for the attainment of an honorable place in the profession. We have great need for just such men and we venture to believe that as dentistry advances the best of men will not find themselves altogether out of their element in its ranks.

C. N. J.

AN IMPORTANT DUTY.

If there is any one more than another of his professional duties which the dentist can ill afford to neglect, it is the instruction of his patients in the proper care of their mouths.

If the writer were not continually coming in contact with persons who are either careless, or uninformed in regard to this important matter, he would consider an editorial concerning it superfluous, but the lack of thorough cleanliness frequently observed in the mouths of even intelligent persons who have for years been under the care of operators of ability, is surprising, to say the least.

That the fault does not always lie with the dentist, is well understood. Some persons, apparently, cannot be taught the value of cleanliness of any part of their bodies, no matter how much instruction they receive. Lessons in hygiene are too often received in one ear and let out at the other.

Still, the dentist should not be discouraged, but should continue to stimulate, in various ways, according to his best judgment, his patients, to a scrupulous neatness in the care of their mouths. Sometimes we have women of æsthetic tastes, refined in every way perhaps except in this particular, and to plainly tell them the repulsive truth would wound their sensibilities in a way not advisable. It were better to suggest the use of a stiffer brush, and a more vigorous application of it. A mouth wash might be prescribed, advising the thorough brushing, first with water, followed by as thorough a use of the prescription, thus securing a double amount of attention to the teeth.

It is not uncommon for a patient to tell his dentist that he brushes his teeth once, twice, or three times a day, when at the time of the telling they are far from clean. In some mouths all but one or two teeth, less accessible than the rest, will be found clean, for instance, the left molars on their buccal aspects, if the patient be right-handed, or those on the opposite side, if he be left-handed. A kindly pointing out of such oversights will be gratefully received by those who have the will to give the needed care. In cases of extreme carelessness it may be necessary to use very plain language, telling the patient that the best of fillings would be likely to fail on account of such neglect, telling him of the offensiveness of his breath, of how his entire system may be poisoned by its inhalation, and that the offensive matter in his mouth contains myriads of microbes. This last, usually causes him to prick up his ears and it can be seen that he resolves to get rid of the offenders.

The word microbe is a powerful lever with the laity.

The dentist should be particularly explicit in his instructions to the young people under his care, sometimes even taking the brush in hand and brushing their teeth in order to show the correct use of the instrument.

All patients should be told that nature fashioned the teeth and gums for coarser food than that now commonly used by man, and that the vigorous use of the brush tends to keep them in health by supplying needed friction, which has been lost by the discontinuance of the coarser food. That one tires of this continual talking goes without saying; but faithful service to those who place themselves under our care demands it.

Besides for our own reputation it is worth while ; an indifferent filling in a perfectly kept mouth will last longer than a better one in a mouth neglected.

It may be well to add that example, here, as elsewhere in life, is better than preaching, and that unless one's own mouth is kept in irreproachable condition, one's efforts will not be so effective.

T. L. G.

The Hypnotism Fad.

We believe that the time has arrived for some one to call a halt on this latest—and in some respects most unfortunate—craze. The medical and dental professions are perennially assailed with the greatest variety of unique and unexpected fads that ever could be imagined as emanating from human brains—even in this inventive age.

This latest one of hypnotism has about it some of the same alluring features that accompany most fads. It has also other features which are ludicrous, some that are nonsensical, and a few that are positively dangerous.

When the rejuvenation of this subject began to break out among the dental profession—for, after all, it is a very old one—we waited patiently with the idea that there might be something intrinsically valuable in the process that had never been developed till now. From the earnestness of its advocates, and the breadth of the claims made for it, it almost appeared that something tangible and definite had been accomplished in a new field. But the more we learn of what is being done in this line the more we are convinced that nothing new has been discovered, and the more we are impressed with the utter folly of teaching such methods in the dental profession.

We do not so much question the potency of hypnotism as we do its practicability. It has little or no place in dentistry, and the sooner its devotees realize this the better it will be for their ultimate welfare. No man can afford to gain the reputation of practicing hypnotism in dentistry. It will drive from his door the most desirable class of patients--people who are logical, hard-headed, and devoid of nonsense. It will also militate against his reputation through an element of suspicion—that must be admitted as more or less pardonable--on the part of many people. We remember talking some years ago with a dentist who had employed hypnotism in his practice quite extensively, and he informed us that it had taken a long time and much perseverance to live down the evil effects on his patronage. He had never practiced hypnotism with anything but the highest motives, and yet many of his patients grew suspicious. The sentiment finally became so pronounced in the locality that parents in sending children to him for dental services, often sent a note to the dentist requesting him not to hypnotize the child. He gave it up, and the most ardent of our recent converts to hypnotism could not persuade him that it was advisable practice. A dentist must guard most sacredly the reputation of his office, and no matter how careful he may be in the use of hypnotism, nor how honest in his convictions, he takes too many chances of giving his office an unsavory record by following this practice.

Indeed we are much in doubt, as to the advisability of a dentist appearing too prominently before the public in the light of a man who fills teeth without pain. "Painless dentistry" is too often a synonym for poor dentistry, and people are fast learning this fact. Then again to become prominently known as a man who employs materials or methods for the purpose of doing work without pain, is to invariably draw to his patronage a class of people who are not desirable. They are in the main made up of individuals with no self-control, with no stamina, and often with little intelligence. There is probably no surer method of demoralizing a practice than to make this feature of painless dentistry a drawing card.

We do not wish to be understood as ignoring the humanitarian principle which should be instinctive in every dentist, to the end that he shall perform his operations as expeditiously and painlessly as he legitimately can. We believe in kindness, in consideration, in delicacy of manipulation, in proper accessaries to our work, and all of the other elements which enter into the make-up of a careful, skilful practitioner; but we do not believe in anything which savors of the mountebank or sorcerer.

The younger members of the profession are especially warned against these unscientific and unreliable methods. Let hypnotism alone. C. N. J.

THE ESTIMATE OF DENTISTS BY THE PUBLIC.

Impressions formed upon the public mind are usually of a permanent nature. Once formed they are not easily erased. Any attempt at erasure results only in a blurring of the detail. The main lines though slightly dimmed, can easily be traced through the clouding produced by the erasing process, and the impression can be discerned without difficulty.

That which is true of general impressions upon the public mind, is true also of particular ones, and this truth may be applied to the impresses formed by the dental profession upon those outside of it, or upon those whom we may call the public. It is conceded by most of the thinking dentists, that the public has not the highest regard for dentists taken as a whole. They well understand that dentists as a profession have been suffering in the past, and are suffering to-day from the impressions formed upon the public mind by their own conduct. They too, know that these impressions are not easily removed. Nor is it strange that they are not easily removed when it is considered that all impressions, whatever their nature, are more or less permanent. The attempts at eradication, made at different periods in the history of dentistry it is true, have resulted in the elimination of some of the minor lines and details, and a very few of the bolder outlines, yet the impression that dentists as a class are a lot of mechanics who have gained a smattering of scientific knowledge, which is of no especial value in their work as mechanics, still seems to pervade the public mind to a great degree. The great public seems to be incapable of comprehending the scientific conception of dentistry. When the attempt is made to erase the mechanical conception, and to substitute the scientific, only hopeless blurring of the two conceptions results.

What has caused these impressions, the effects of which dentists have found existing among all classes of people? Does this cause lie within, or without the profession? In general the impresses upon the public mind are the result of causes, or qualities residing within the object or objects from which the impressions are received. If such is the case, then we as dentists are the formative objects, and a little introspecting study may be indulged in with profit. Has the desire to retain that nimble traveler and fickle friend, the dollar, been a causative factor outweighing all other considerations, or has it been simply a lack of energy in mingling the purely mechanical, with the scientific? Is it lack of discernment in applying science to mechanics; is it the absence of education, so that our speech and external appearance betrays the plebeian; is it one or all of these causes, and others, which lead the public to fail in its appreciation of the members of our profession? These questions are not easily answered, but it is certain that the public has been quick in discerning the proper relations of the majority of dentists to their fellow mortals. All dentists cannot be included in this, yet the entire profession must pay the penalty which the majority have entailed, and all must suffer alike.

The value which an individual places upon himself and actually seeks to attain. determines not only his real value, but his apparent value in the eyes of his fellowmen, and what is true of individuals is true of the whole body. This principle may be applied with justice to the dental profession. It fails in its proper valuation of itself, and consequently fails in attaining to that valuation, both in its own eyes and in the eyes of others. A few of its members do know themselves, and value their profession accordingly, but the majority of dentists, who by virtue of their numbers determine its standing, do not set a true valuation upon themselves or their profession.

The remedy is easily supplied, provided the standard of value each dentist places upon himself and his profession be a high one and he strives to attain that standard; but, unless this be done, dentists cannot rank themselves as a liberal body of men, for no society or profession can be greater than its constituent elements. Its real and its apparent value to the world are governed by these elements, and unless the elemental forces adjust themselves to high standards of attainment, the main body must remain as it is, or sink still lower. G. J. D.

Lubricate Your Disks and Strips.

We see so many dentists still using sandpaper disks and strips in finishing fillings without vaseline or oil to lubricate them, that we feel like once more calling attention to this matter. It is a censurable species of inhumanity to run a disk dry on a gold filling, or to seesaw a strip back and forth between teeth without using a lubricant. A disk or strip will not heat up so rapidly if covered with vaseline, and contrary to prevalent opinion, the cutting properties will be improved. Quite often the question is asked by those who never use a lubricant: "But will not the vaseline or oil prevent the sandpaper from cutting?" A careful test of the matter will prove to these men that their impressions are wrong. If there were no other recommendations for the use of lubricants than the one of increased cutting power this would be a sufficient inducement to always employ them. When disks are used with the rubber dam in place, it is extremely difficult to prevent a dry disk from catching up the dam in its revolutions and tearing it, but a disk well lubricated will play over the dam with little danger of a mishap. Another recommendation lies in the fact that when well smeared with vaseline a disk becomes flexible and can be pressed into depressions and be made to cut at any desired point by guiding it with an instrument. This is well nigh impossible when a dry disk is used.

This latter consideration is very important wherever a disk is employed between teeth for finishing a filling. If a proper contour is to be left to the filling, it is necessary that the disk shall cut only at the cervical portion of the filling and not at the contact point. A flexible disk may be pressed against the neck of the tooth if desired and all the cutting confined to that region, but a dry disk will almost invariably cut away the contact point and make a flat filling. The variety of curves to be given a flexible disk in cutting is limited only by the dexterity of the operator.

Another argument in favor of lubricating the disk or strip is one of economy. In this condition it will hold the fine particles of gold on its surface, and the dentist who preserves his old disks and strips for a time and then turns them over to a refiner for melting will be surprised at the result.

C. N. J.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

To the Editor of The Review: NEW YORK, 1894.

A Happy New Year to all the readers of THE REVIEW. The old has fled, ring in the new. The past has gone, the present is ours, the future may never come. With a new year comes a new editor and his associates. The new is always welcome; it brings bright expectations, and fosters hope. We concede this for THE REVIEW. The January number is on our table, with no loss of energetic force apparent, fully up to anything of the past. Why not? So much is dependent upon those who are, or who ought to be, contributors of reading matter. We think that too many practitioners are indifferent regarding their obligations. Yes, we repeat it, their obligations. Dentists are greatly indebted to journals for the diffusion of knowledge which can be reduced to practice, and they might do much to inspire writers who have never yet taken up their pens, to tell of incidents of real practical interest. A lack of confidence in many young practitioners too often stands in the way of making our journals bristle with interest. Original ideas, worked out in one's practice are much needed. Cases are constantly occurring that can only be dealt with successfully by inventive genius.

We readily recall our first attempt, which was made in *The Cosmos.* We answered a call similar to the one we are now making. We not infrequently go back and read over that first article, and then we make a restrospect of all since then. While it has fallen short of what we could desire, yet we are far from regretting that we have done what we could. We know what it is to have a manuscript returned, and we own up to a feeling almost of resentment, but it has always served as a tonic. One comfort we have had; if we thought our efforts dishonored, we did not hesitate to try another journal, and usually succeeded to *our* satisfaction at least, and felt that we had gained our point. We could tell some pleasing, and some galling experiences. Here is one: We sent a paper to a leading journal, and not gaining any attention that looked encouraging, we concluded to make some inquiry. We got a ready reply in the shape of a return of our MS., and a letter of comment which stirred our righteous indignation so much that we decided to call in the aid of a few mutual friends. We submitted our manuscript without informing them of our mortifying experience. After getting favorable opinions from them we showed the letter we had received from the editor. Suffice it to say, our article was published. Some months afterward, imagine our joy to learn, by a letter from a student, that Prof. ——— had given our article a most flattering commendation, telling the students that it was the *best* article upon the subject he had ever read. (We thought so too.) We always had a decided itching to tell this editor how we had beaten him. The favorable comments made by this professor had a very stimulating effect upon our future course, for that professor was esteemed for his high order of talent. Aside from this, we have needed more or less trimming, and we have gotten it, and reduced it to profit. Let those that read, go and do likewise.

Prof. Barrett came to New York this month, before the First District Society, "slaughtering the innocents." But on the whole the conclusion was reached that mortality among the infants during the heated months, was not so much due to the first dentition as has been generally supposed. Also, that the prevailing practice of frequent lancing was not favorably regarded. Prof. Heitzman never did himself so much justice as in the talk he gave. Many voiced this remark. Poor feeding and poor food was emphasized by him.

Prof. Harlan was present, and gave additional value to the discussion. He told us that he sailed for Cuba the following day. Bon voyage, and a safe return. He has earned it. Taking good care of one's self in season, is necessary. Prof. Barrett confessed to not feeling in the best of moods, overworked, so he says. It does not pay. A good practice should ensure a variety of home comforts, and plenty of recreation. There is no excuse for any man becoming a slave to the demands of practice. He is not just to his friends nor to his patients.

The First District Society will unite with the Second at the February meeting, to be held in Brooklyn. "Supper engaged," the genial President announced, and he is good for such promises. If this proves as much a success as the union meeting in New York, it will be all that can be desired. It takes place February 12.

The meeting of the Odontological Society this month was a very live one.

Dr. A. H. Brockway, the new President elect, was in the chair, and all went smoothly. Dr. Davenport gave a very entertaining account of an operation by which he was able to do good service to some loose inferior incisors. He joined them together by drilling a groove in the cutting edges, and laying in a wire which was fastened by filling the entire channel, thus keeping the teeth firmly together. This succeeded very well for a term of years, and finally he made a pure gold cap, reaching down about a third of the lingual surface, and cemented it on. This was, to date, doing satisfactory service. The doctor, in presenting this device, said that he was actuated by a desire to set an example to all the members, viz., to give an account of any peculiar operation, that they at some particular time have made. Certainly, if three-fourths of society members would follow this worthy example, it would enliven not only the meetings, but the pages of journals. Dr. Davenport did not claim that the uniting of these teeth by a bar and filling was original. He had heard it mentioned, and had found it practical. The late Dr. Atkinson, it will be recalled by readers of the journals, published a case where the lower incisors had been fractured in the sockets, and the doctor made use of this method to support the teeth till firmness was secured. It proved a success.

So far as we know, this idea originated with Dr. Chas. Andrews, of New York. It was suggested by him to Dr. Atkinson for the case we have mentioned. Dr. M. L. Rhein has made successful use of the same plan.

Dr. Benjamin Lord exhibited an improvement of his long used and favored instrument, the sickle. He has now produced them with grooved edges, giving them a thin cutting edge, easily kept in order. This instrument has been much in favor in this part of the country for many years and is certainly very useful. We know this for ourselves.

The tin——ers came out in force at this meeting. Dr. S. G. Perry was the champion. Now, what shall we think about cohesive tin, made so by cutting shavings from a bar, with the lathe? Specimens were passed around for trial. As the crazy man said, we will know more of this "cohesive" quality later.

The value of tin is well known, and it will always hold a very important place in the list of materials. We can hardly see any great force attached to the value of the cohesive quality. Contour tin fillings are not demanded, for they cannot be made to stand the wear of mastication; certainly not long enough to warrant the making of such operations to any large extent.

Amalgam is forging ahead seemingly. Dr. Morgan Howe was the essayist of the evening. "Something about Amalgams." It will be good reading. One point he brought out, and it will bear emphasizing. He quoted from a paper of Dr. Kirk's, published in *The Cosmos*, which commented much upon proprietary preparations. According to Dr. Howe's statements a good many dentists are using articles that they have no knowledge of. We think the pot has been calling the kettle black a good while. Well, Dr. Howe thinks he sees a way out, ultimately, to remedy all this, so far as it refers to amalgams.

Dr. Crouse, of Chicago, was the star of the evening, yet not so brilliant as we have seen him. Look out, friend Crouse, don't put on too heavy burdens. No one will thank you. We all admire your courage. The doctor said he was on a tour taking testimony for the case of bridgework litigation, so we are inclined to excuse him. Crouse has a good eye and a very active brain. It is wonderful what he accomplishes. He says he will be perfectly willing to receive a salary when things get so fixed that it can be afforded. We think he has done a big lot of hard work already for the profession. He gets a good deal of praise, but we think he is asking himself, and wisely: "Can I do it for praise always?"

The doctor exhibited a little of his political leaning. He thinks we have got a "Brigadier Congress," but, should they give us free trade, it may result in a benefit to dentists.

We have been looking into some new offices in New York. Dr. Davenport, formerly with Dr. Bogue for many years, purchased a house in West 47th Street, near Fifth Avenue, and in it he has a very commodious and tastefully arranged office. Everything indicates quality, neat but not gaudy, just like the doctor.

Dr. George Evans has taken very nice quarters in West 39th Street. While he owns houses, yet he hires. He has an elaborate office, rooms fitted in modern style, of the best of oak furnishings and costing a good bit of money. It will afford one pleasure to visit the doctor and see his taste displayed.

Dr. Bogue bought and remodelled a house in West 48th Street. Let any one ask him how much it has cost him! A good bit, *sure*. But he has spared no pains in an effort to suit his taste. If he has not suited it he certainly must be very hard to please. His offices, on the lower floor of the house, are entirely new, and are very elaborate, arranged with a variety of conveniences hard to excel. His laboratory is a delight to view, and nothing lacking in accessaries; besides he has two finely arranged offices on the second floor, one of them intended for his son, who is now at the University of Pennsylvania.

The parlor and library are rooms to be admired, and must be seen to be appreciated. We have *never* seen anything that so well suits our taste, but we always liked the *best* things. These rooms, when illuminated by electricity, as they are, give an effect, together with some fine paintings, that calls out our admiration. He has a very large and interesting collection of models of irregularities that indicate unusual study, and are worth an examination.

We have noticed the absence of the genial orator (Stockton) of Jersey from the gatherings of New York dentists since the congress. Of course we in no way connect it with that; but he tells us that he too has been building a mansion, and when he gets it ready for a warming, we may tell the readers of the REVIEW what a house he can build. For he, too, is a man of decided tastes. His dining room is always made a very pleasant corner of his house. Well, not all of us can build a house; many of us are not a little like a female evangelist we heard lately. She said she thanked God that she and her husband had no real estate. All they had of earthly goods was a trunk and post office address, and yet they are better off than some fifteen hundred men that we called on at the "Traveler's Club," at five in the morning, on New Year's day, where they were taking their coffee and rolls. They carry the banner day and night, and they have neither trunk nor post office address, and yet there are said to be thirty thousand millionaires in the United States. How many of these are dentists?

The demise of Dr. J. C. Smith, of New Haven, Conn., recalls some pleasant reminiscences, in connection with the new era in dental practice, that had its origin with the formation of the Brooklyn Dental Association. This was in 1862. This body called to its association any and all practitioners that sought improvement. This society was on rollers, and was capable of being transferred to any part of the country. Dr. Smith had a tidal wave introduction to the citizens of New Haven by the way of nitrous oxide gas in connection with the removal of teeth. He was assisted by Dr. Colton, at that time an amusement lecturer with this gas. It was a singular fact that, after the discovery of anæsthesia by Dr. Wells, so many years should elapse without its use. This new deal of Drs. Smith and Colton created a dental furore in New Haven, and not long after it struck New York. A few men thought they saw "millions in it." From this upheaval Dr. Smith reaped a practical harvest. He settled down to the large practice that flocked to his office, and turned it all to a business account. Dr. Smith invited the B. D. A. to New Haven for one of their meetings. They went by the Sound boat at 3 P. M., and returned by the midnight boat, arriving in time for the next morning's appointments. After the doctor had shown up his handiwork in the way of some very fine contour fillings in central incisors —and they were fine—a bountiful collation put every one on his good fellowship, and Joe Smith and his praises were in all mouths. This echoed all over New Haven. Well, it was not long before Dr. Smith saw a demand for a little improvement in the formula of oxychloride materials for filling teeth, and hence came this material bearing his name, backed up by all the good hale fellows of our society. Dr. Smith told us that his commissions were in one year $3,300.00. No wonder so many have been eager in this direction.

QUID NUNC.

[We are in receipt of a letter from Dr. M. L. Rhein, of New York, in which he claims that an injustice was done him by our New York correspondent in his January letter, in attributing solely to some one else an invention in which Dr. Rhein had an equal or greater part. He avers that the perusal of his paper, when it is published, will prove this beyond a doubt.—Ed. REVIEW.]

A PROTEST AGAINST THE USE OF GLAZED PAPER.

Editor Review: CINCINNATI, January 15, 1894.

Will you, in the fullness of your heart, lift up your voice against the reprehensible practice of publishers who *insist* upon printing their journals on glossy paper?

There is nothing that can exercise so detrimental an effect upon eyes (be they good, bad or indifferent,) already worn out with the fatigue of a day's close application at the chair. The dentist gets but little, if any, time to read during the day, and he must perforce devote his evening or a part of it, to reading and study. And this should be obtained with as little physical effort upon the part of the eyes as possible, for two reasons: First, to save them extra exertion, and second, freedom from physical effort gives the mind greater opportunity to digest and assimilate. I can conceive of nothing so exasperating, annoying and wretched as the reflection of the lamp's light from the page of one of our "well gotten up mechanically" periodicals, dental and otherwise. A sharp pain darts through the exhausted orbs, the print obligingly disappears from view in a halo of splendor, only to leave the reader to wink, blink and squint in the frantic endeavor to find his place, and begin again.

Con your exchange list and sum up the number of editors and publishers who are devoid of intelligence on this important point, as well as totally bereft of the milk of human kindness. It is a genuine treat to read the REVIEW, in more particulars than one, especially as regards the point at issue. A paper that is rough, "toothed," absorbs or diffuses the light, both natural and artificial, thereby bringing the type into a wholesome and comfortable relief that is soothing to the eye, while reducing to a minimum the optical *labor* of reading.

I think, Mr. Editor, that you heartily agree with me in this, and at an opportune moment will give it emphasis with a few vigorous strokes from your trusty stub. E. G. BETTY.

FOREIGN CORRESPONDENCE.

Our London Letter.

To the Editor of the Dental Review: London, January, 1894.

My Dear Doctor:—I am always pleased to receive the latest dental news and gossip from the great Yankee land. What a wonderful people you are to be sure! It is sometimes very difficult for us here in the slow going old world to look at things from your point of view. But still we admire you, and I may say to you in strictest confidence, we often envy you. You are so energetic, so delighted with life, and *so full of surprises.* But we sometimes think, don't you know, that your energy frequently runs into restlessness, and that your feverish desire for novelties often leads you away from much that is valuable and stable in the results of the long experience of the past. It is, no doubt, an admirable thing to be enterprising and pushing, but do you not think that you may sometimes be just a little *too pushing?*

I remember that several years ago I had a patient who had previously for many years been in the hands of an American dentist. He had placed many golden monuments of his skill in the teeth of this lady. Some of them had crumbled away leaving only ruins; but I am bound to add that many of them remained to prove the honesty of his purpose and the faithfulness of his performance. I discovered while stopping (or filling as you prefer to say) a central incisor for this lady, that there were some curious yellow tinted spots beneath the mucous membrane just opposite the end of the root of the tooth upon which I was engaged. Curiosity at length led me to cut through the membrane over one of these spots. The revelation that followed justified me in cutting into the other spots and presently I had displayed on my operating table several pieces of semicondensed gold foil which had, at some previous time, been forced through the foraminal opening of the root of this central incisor, in the effort to make a very "solid" operation. Now, I think the gentleman who did that was *just a little too pushing!* Don't you?

And now, I will let you into a little secret. I am a member of a private Dental Society which was formed here about three years ago. Perhaps I should call it a Dental Club as there are only seven of us (the mystic number, you see), four of whom are Englishmen and three Americans. We did not feel quite safe, you know, with you "Yanks" without a majority of one.

You may take my word for it, we have some "rare old times," as the Americans say, "over the walnuts and wine." How we "scorch" the *great* and *wise* of our profession on both sides of the water, will never be entirely known except to the mystic number who assemble about our board. But we are just—perfectly just. Merit is always recognized and applauded, but shams, pretences and, above all, pompous ignorance, these things are exposed to the most merciless sarcasm we can command. We are not entirely confined to dentistry in our talks. We discuss almost everything in fact, from copper amalgam to the composition of the fixed stars, from the butler's latest sauce to Esoteric Buddhism and sometimes, on rare occasions, as the "wee sma' hours" draw near, I have known these diverse topics of conversation to become strangely mixed. But on the whole we are a reasonably temperate set of fellows as you will see when I tell you that we still have on hand several bottles of rare old port out of a lot of six dozen, which one of our club received from the hands of a "grateful patient" about six months ago. To be sure we only use this on rare occasions, but then we meet every week and there are certain to be quite a number of *rare occasions* in six months. The recipient of this "gift of the gods" is known as the "quiet member" and in some future letter I will tell you what he did for that "grateful patient."

I will not try to tell you much about the mental characteristics of the members of our club for they will become sufficiently clear in the remarks which I shall, from time to time, quote to you. I will simply say that the members are never addressed or spoken of during our meetings by the names which they are known by in the world. They were given a "new name" when the club was organized and during our meetings are known only by this bestowed cognomen. Your correspondent is the Secretary of the club and is therefore known as "The Scribe." Then there is "The Philosopher," so-called because he happens to be a member of the Society for Psychical Research as well as of several other learned bodies; the old-fashioned dentist (for convenience always known as "The Old Un") who manages to keep young in thought and enthusiasm; The Cynic (called "Cynicus" for short) who is known to two or three of us as a most benevolent and lovable man; "Bovis," the steady going, practical man who is always falling foul of "The

Philosopher"; and, lastly, "The Judge" who, when in the mood, will give a most trenchant summing up of the arguments and remarks of the evening. These, with the before mentioned "Quiet Man" make up the "mystic seven" of our Round Table. Five of us are members of dental societies in England and America and the other two are "without honors."

When the cigars had been lighted last night, at our regular weekly meeting, after considerable discussion and no little opposition from Cynicus and the Old Un, I finally obtained the consent of the members to send you a monthly "edited and corrected" report of our proceedings. Cynicus' opposition to making public our discussions was founded on his paraphrase (applied to the dental profession) of a certain remark once made by Carlyle concerning the British people. I will not quote this remark to you for fear of arousing your prejudice against a man whom you would be certain to like on more intimate acquaintance. The Philosopher remarked that what he had said might or might not be true, but if true, then there was all the better reason why the wisdom of the "mystic seven" should be sent forth to the world. Perhaps I should explain in this first letter some of the purposes for which our secret club was organized.

The first *raison d'etre* was probably the desire of a few congenial spirits to meet and talk over such current professional matters as are of interest to dentists, in an entirely free and untrammeled manner. We are not restrained in our discussions by any red tape officialism, and I venture to remark that our conclusions (and we do sometimes reach conclusions as you will see) are as well founded as the best that come from more widely known organizations.

Another, and perhaps to you more interesting, object of our corporate existence is the accumulation of evidence concerning the "methods of practice" of several quack dental institutions in this vast center of civilization. The great and well merited reputation which American destistry has achieved is well known throughout the world. This fact seems to have furnished the opportunity for several firms of English quack dentists to advertise in a wide-spread and ingenious manner the great advantages which *their* systems of American dentistry offer to the public.

Some of the most valuable inventions and devices of American dentistry, have in this way been dragged through the mire of the cupidity of these men, and so befouled by every advertising device that cunning and dishonesty can invent, that it will be years before these really useful processes assume their proper and merited position in the practice of reputable dentists. The American members of our club are especially, and I must admit justly, indignant because an effort has been made by certain English dentists to make it appear that this is, if not *the* at least *an*, American way of practising dentistry, and that the methods adopted by these English quacks are American methods. The Cynic who, perhaps contrary to your expectation, is an American, boldly, but not altogether wisely, charges reputable English dentists with indifference about these advertising concerns *because they are publicly known as American.* He has even been known to go further than this and to express his belief that these institutions would long ago have been closed, if there were not a tacit understanding among English dentists that it would be of very material advantage to them if the prestige of American dentistry in London could in some way be lowered a little. There is, I think, a very practical and substantial reason why we may suppose that Cynicus is mistaken in this opinion. It seems to me that most English dentists would like to see these places closed, if for no other reason than because they would be sure to reap a decided benefit from such action. For you must know that the word "American" and the ingenious illustrated advertisements have drawn some of the best people of England to these quack establishments. I do not know that they have ever been patronized by royalty, but I do know that individuals in close official relations with royalty have been there, and one such person has given a very strong affidavit with reference to the maltreatment which he received there. Our club has accumulated a vast mass of evidence concerning these places which we hope to make effective use of in good time, and from which I shall occasionally draw material for your wonder and amusement. I say *amusement* because the foolish credulity of mankind is often amusing as well as pitiable. But I have just heard of a case, which I will here describe, that leaves no room for anything except pity and indignation. A father took his little daughter of about seven years to one of these institutions to have her mouth examined. At the first visit an impression was taken and an estimate of thirty guineas (150 dollars) was given for the necessary operation, though how they succeeded in convincing the father that a child seven years old needed work of that value in her mouth I have not yet ascertained. At the second visit the child was very nervous over the clumsy and harsh treatment she received. Owing perhaps to this restlessness the operator allowed an instrument with which he was excavating a tooth to slip, and it penetrated the tongue severing a branch of the lingual artery. Doctors were sent for in hot haste and finally after the advent upon the scene of two medical men and a surgeon, the bleeding was stopped but not until the child had been brought into a very precarious condition by the loss of blood. She was removed to an hotel near by. Symptoms of septicæmia soon developed and for several weeks the child's life was despaired of. She slowly recovered from the blood poisoning, but her nervous system is in such a state that the mere mention of any operation on the teeth nearly sets her into convulsions.

And now for an interesting sequel to this story. A bill for the full amount of the original estimate was sent to the father and he paid it, probably under the threat of being brought into court. You, with your American ideas of somewhat rough and ready justice can hardly understand how such a transaction could be closed in that way; but many English people would submit to such an imposition rather than have the affair made public. The quack firm knew this and hence their action. English people are not all alike in this respect, however, and many suits for malpractice have been commenced against one of these firms, but the shrewd quacks are too wily to permit a case to come into open court, and so they always settle the matter as best they can before it comes to the public ears. You are wondering why such places are allowed to exist here? Well, as you know, English justice moves very slowly when the vested rights of property are touched. But since the court has ordered the closing of the great quack electrical establishment, we have strong hope that an action will soon be begun against some one of the quack dental establishments. Their methods are in many respects almost identical, and now that public opinion is somewhat hot on the subject of quackery, perhaps a move will be made. So you see our little club has one function which may soon bring it into public notice.

And now perhaps I have written you at sufficient length for the first time. In my next letter I shall endeavor to tell you something about our discussions of the respective merits of American and English dental colleges, and some of the causes which have led to the present strained relations between the profession here and in your country. I hereby give you warning that you must be prepared to hear some of your American methods criticised with great frankness, but at the same time the faults of the English system will not be spared. This, I believe will be more interesting to you than the present letter because of the subject, and also because the individuality of the members of our little club will come more distinctly into view.

I am, my dear doctor,
Fraternally yours
"The Scribe of the Mystic Seven."

To the Editor of The Dental Review:

Dear Sir: —To discover in one's self a resemblance, however remote, to some great personage is usually flattering to one's vanity. But when I awoke the other morning and found myself famous (at least in the eyes of some unknown friend) I cannot truthfully say that I felt altogether flattered by this one resemblance to the author of Childe Harold.

In truth, I felt very uncomfortable for reasons which I will presently mention. I have for so long a time enjoyed the quiet pleasures of a life unvexed by the "hot ambitions of the world," that it was a great shock to be apprised suddenly and without warning, that I had "attained marked social attention from Queen Victoria," and, as if that were not enough to satisfy the ambition of any reasonable man, I had also won my way into companionship with "*Mrs.* Burdette-Coutts, (what *would* the good Baroness say to that, I wonder), Browning and *others*," (observe if you please, the magniloquent, Col. Sellers-sort-of-style of that word "others." It is a splendid generalization which might embrace all the famous people of London).

I assure you, Mr. Editor, it was like being unexpectedly soused in an ice water bath. It fairly took my breath away. And then when I read the paragraph about *catnip tea*, immediately preceding this glowing description of my social triumphs in London, I deeply regretted that my unknown admirer had not been thoughtful enough to give me the catnip tea *after*, instead of before the cold bath.

I appeal to you, Mr. Editor, to advise me what I ought to do in the very trying situation in which I find myself. Do you think it possible for a "mere dentist," especially if he be of nervous temperament and not over robust, to live up to the "blue china" of having "attained marked social attention from Queen Victoria?" I shudder to think of all that is involved in this sudden change in all the habits of my life.

No more quiet evenings with my books; no more toasting of my shins before my companionable fire; no more confidential chat with the friend who drops in to discuss the latest move of the old Parliamentary Hand or the doings of the Chicago Dental Congress. I am a lion now, and therefore I must needs go out and roar.

But perhaps, after all, this brilliant vision of my would-be friend is only an apocryphal expression prompted by good will and a little ebullient Christmas emotion. I can fancy that he had recently dined, not wisely but too well, and feeling at peace with all the world and full of generous enthusiasm he selected my innocent head to receive the outpourings of his emotional exuberance.

And now, Mr. Editor, I have a small bone to pick with you. Is it not rather discreditable to the chair which you occupy to allow nonsense of this sort to appear in your journal?

Your anonymous correspondent puts in a little plea for a high class scientific quarterly devoted to the interests of the dental profession. Heaven knows there is need enough for such an enterprise, and perhaps one of the best proofs of this need is to be found in the very letter in which I am held up to ridicule.

My personal friends may possibly be interested in the fact that I have published a book on "The Home and Haunts of Shakespeare," but of what interest is this to the dental profession? Neither do they care to know whether I have received a letter from the Queen, or at whose table I dine. Yes, by all means, let us have a dental quarterly in which such irrelevant matter will find no place.

Perhaps at some future time, when I am in a more amiable mood, I will give you my views on the subject of a dental magazine. In the meantime convey to "Quid Nunc Scriblerius" my most hearty expressions of regret that he should have indulged in too much champagne just before writing his contribution to your otherwise interesting journal. I am, dear sir,

Faithfully yours,

J. LEON WILLIAMS.

30 George Street, Hanover Square,
LONDON, January 13, 1894.

REVIEWS AND ABSTRACTS.

YET ANOTHER PROFESSIONAL HOLIDAY. THE WORLD'S COLUMBIAN DENTAL CONGRESS. By Dr. George Cunningham, Cambridge, England.

[CONTINUED FROM JANUARY REVIEW, PAGE 57.]

The length of the opening session, and the necessary replenishment of the inner man, rather interfered with the opening of the various sections in the afternoon at the appointed, or even at a later, hour, but several of them were organized, though no papers were read. On the second day, clinics, general session, and section meetings all fitted in and kept every one very busy, and so it went on all through the week, the attendance and interest being well sustained till Saturday, except that on Wednesday and Thursday two supplemental general sessions were held in the evening, and were devoted to lantern exhibits.

It would be hopeless to attempt even the briefest *résumé* of the work done, as may be proved by the fact that the report in the September number of the *Dental Cosmos* runs into just 400 pages.

The Hall of Washington, in which all the General Sessions were held, was situated so close to a busy railroad that the too frequent passing trains with their brazen bells often completely drowned the words of even the strongest speakers. To this fact, and to the poor acoustic properties of the hall (rather than to the character of the communications) must be ascribed the small amount of discussion at these meetings. Dr. Zsigmondy's paper on "Congenital Defects of the Enamel," and that of Professor Miller "Concerning Various Methods Advocated for Obviating the Necessity of Extracting Devitalized Tooth pulps," were both the results of long and patient research, and alike worthy of their authors and the audience to whom they were addressed. Dr. Whitney, from Honolulu, Sandwich Islands, gave a most interesting account of the condition of the teeth and skulls of the ancient Hawaiians, and the specimens he exhibited were of extraordinary scientific interest, proving that a very large percentage of caries, the presence of dental irregularities and the noneruption of the third molar are not solely characteristics of modern civilization.

Dr. Girdwood, L. D. S., Edin., sent a paper on "English Tube Teeth," which was well illustrated by diagrams and specimens. It seemed to me a most complete and extensive paper, embodying excellent suggestions for the use of these teeth in many directions not usual even in England. It was a novel subject to an American audience, and excited much interest, although it suffered like others from the absence of the author.

I must confess that I can say little about Professor Fillebrown's paper on "Hypnotic Suggestions as a Dental Obtundent and Sedative," for alas! it was only too effective, and not even my most persistent efforts prevented my constantly relapsing into an uncomfortable intermittent sleep. His cases are interesting, and I gathered that in five years' time the practice of every intelligent dentist would be governed by the principles of hypnotic suggestions; *nous verrons!* I have given some attention to this subject, and I think not. I wanted to have asked the essayist if he charged by "time" for the time element in such cases, except in very rare instances, is very considerable.

Despite other attractions, the evening sessions were very well attended, and well they might be, for the lantern exhibits were of the highest order. Dr. Andrews was especially successful in his profusely illustrated "Contribution to the Study of the Development of the Enamel." A thrill of approval ran through me as I heard him allude to Mr. Mummery's Royal Society paper on the "Structure and Development of Dentine" as "perhaps the most important contribution to the literature of dental histology during the last decade." Dr. Andrews has long made enamel his special study, just as Mr. Mummery has dentine, his skill as a photomicrographer rivals that of his English co-worker, hence his conclusion that there probably exists in developing enamel a fibrous substructure on and between which the enamel is deposited, though its existence seems wholly blotted out in the dense calcification of the tissue, is all the more interesting, and justifying his being described as the Mummery of America.

Dr. Sudduth's paper on "Some of the Forces that Influence the Form of the Jaws and Teeth during the Process of Development" was more educational than original, and seemed scarcely up to his own standard.

The second lantern session was an English night.

Dr. Andrews read Mr. D. E. Caush's paper on "Some Changes that Take Place In and Around the Pulp Canal." His views met with some criticism, but his beautiful slides evoked the heartiest appreciation of all, but especially that of the veteran researcher, Dr. G. V. Black.

My own paper followed on "Luxation, or the Immediate Method in the Treatment of Irregular Teeth." The illustrations showed the external and internal aspects of cases in which from one to six teeth had been moved, and ranging over a period of some six years. I learnt from the DENTAL REVIEW, of the next day, that my treatment and the record of my experiments were exceeding remarkable in the success obtained, and that I was asked and satisfactorily answered many questions by my interested audience.

On the following morning Dr. Bryan, of Basle, Switzerland, who, quite independently of me, had successfully experimented in this direction, gave a clinic on "Immediate Regulating," employing, I believe, for the first time, my method of cutting through the alveolar plate with a circular saw. As the case is a typical one, I quote the following account of the clinic.

"The patient was about fifteen years of age and appeared to be well nourished. The case was a right superior lateral incisor standing inside the arch and articulating on the lingual side of the lower teeth. After injecting a few drops of four per cent solution of cocaine on the lingual and labial aspect of the gum, the operator made two incisions in the gum on the labial side, one on either side of the root, extending from the gingivis up to the apex. He next cut through the alveolar plate beneath these incisions by means of the circular saw in the engine. He then adjusted a soft rubber lined metallic guard on the outside of the arch, and placing one beak of the forceps on this and the other beak on the lingual side of the crown of the tooth, forced the tooth into its new position. It was unnecessary to ligate the tooth, as the articulation was such as to keep it in position. The operator by this method avoids moving the apex to any extent, and forces out with the tooth the labial portion of the alveolus."

No doubt many practitioners are, and will be, timorous about such a radical operation. Both Dr. Bryan and myself are very confident as to results, especially in such cases, which are constantly recurring and usually pass untreated. This confidence is further shown by the fact that the patient in the clinic referred to, was the niece of the operator. I subsequently heard that the case was making the usual good progress.

I showed photographs of models in my lecture of a similar case (*a*) mouth irregular at 4 P. M., (*b*) regulated at 4.15 P. M., the patient catching the 4.35 train to London, and dining well at his usual hour. Good enough for America, that!

Space will not permit me to refer to many excellent papers read in the sections, but quite worthy of places in the programme of the general sessions. Some exception has been taken to some of the papers as being unworthy of so great an occasion. That was inevitable. In the absence of any well defined standard of merit, the task of adjudication would have been a very invidious one. I think perhaps that possibly too much leniency was shown to foreign essayists, but surely that was but an error on the right side. I fear that even the best of communications would profit by judicious editing, but where, alas, are we to find the other eye, independent but sympathetic, if it is to be of any real use?

This sectional arrangement gave rise to considerable criticism, both then and since. With a plethora of material and a limited time of meeting, any other arrangement would have been infeasible. Simply because of "the impossibility of dividing one's personality into eight sections," it is absurd to conclude that "very little of real scientific value" was accomplished. Without even being omniverous intellectual giants of the Barrett or Truman type, we may feel a certain sense of disappointment that in following up the work of one section we have been missing matter of much interest in another.

That is one of the disadvantages of development; our prehensile faculties, as it were, do not increase with our opportunities of acquiring knowledge, and perhaps happily so. In the choice of a section, as in other things, we must learn to exercise a wise discretion. Moreover, many an essayist prefers to read his paper before a smaller audience of those who take a warm interest in the subject rather that in the presence of a larger one where the majority are cold and apathetic. Many contributions are of general; many, and some of these of the best, are only of special interest. The combination of general with sectional meetings provides the most satisfactory method of doing adequate justice to both.

The contrast between the discussions at the general meetings and those in the sections were most marked, for the latter were bright, lively and well sustained, as the former were dull, dead and infrequent. "Magnetism in numbers!" Yes, indeed, in matters of great political or social interest, but not in science;

quality predominates over quantity; mind over numbers. Far from regretting the "unified" arrangement of the oral section of the International Medical Congress, at Washington, I regard the general and sectional arrangement of the World's Columbian Dental Congress as a very marked sign of progress already attained and accepted by other kindred organizations.

I have dwelt at some length on this subject mainly because of the necessity of some such arrangement being adopted at the meetings of the National Associations on both sides of the Atlantic, and from the criticism aroused by the partial adoption of the sectional arrangement at the annual gatherings of the British Dental Association by the formation of a microscopic section, proceeding simultaneously with a general meeting. This is not the best possible arrangement but a distinct advance, and should lead in the near future to the formation of other sections. At present, a "sectional" paper comes on perhaps early in the programme, out go a number of those lacking interest in it, probably never to return, or returning too late to hear the other paper or papers in which they were interested and which they might have discussed. Even in our limited specialty there are so many matters of interest that it is impossible to have an equal enthusiasm for all. Why not, then, cater for the greatest number by "sectionizing" and thus providing for the various predilections of each?

"Now tell me about the clinics. Haven't you brought home some improved arrangements which we can adopt at the coming British Dental Association meeting?" was the characteristic enquiry of our alertful secretary. A shade of sadness on my face, and a deliberate "No" was my only reply. "Totally inadequate" may be a just verdict, but it would be unfair to state it so without some recommendation to mercy on account of extenuating circumstances. It must be granted that to make clinics satisfactory, under even ordinary circumstances, is extremely difficult, and under those of this Congress well nigh impossible. They would have been much, very much, better if the magnificent new building of the Chicago College of Dental Surgery had been ready for occupation. As it was, the largest available venue, the old college, was being given up, having served its time; arrangements for removal were already in progress; and therefore it was not surprising that things were not what they might have been. But to conclude that they "were practically rendered valueless by the conditions and environments" is to return not merely a harsh, but an unjust verdict.

In order to carry out my own clinic, I was obliged to pass a very considerable part of several successive days getting the apparatus and appliances through the customhouse. Therefore, to my regret and disgust, I had to lose much in the way of both clinics and meetings. I had, however, ample opportunities of gathering the opinions of my compatriots, who all acknowledged having derived considerable benefit from the interesting series of clinics, and specially mentioned the veteran Bonwill as a tower of strength in himself. Of course, they complained of the crowding; but how can some hundreds of persons see the details of an operation on so small an object as a tooth? Such an operation can only be seen by a very few. We must devise some plan of enlarged models or of having natural teeth prepared previously, showing the operation in its various stages; we must demonstrate principles, rather than illustrate details, if we are to be more successful with our clinics. In some operations *detail* is everything; why not recognize the inevitable and limit the attendance to such by *ticket*? From a demonstrator's point of view, I prefer to have a room to myself, so that even if only a relative few are present they can at least get some general idea of the whole demonstration. In one large room, men flit like butterflies from clinic to clinic, usually sipping but an aggravating thirst-exciting drop of knowledge from each, and often in the process hindering the demonstration to those who have followed it throughout, by inopportune questions.

I did get such a room to myself, and think I must have satisfied some who attended, for I had to repeat the demonstration several times after the Congress. I mention this not because of the processes demonstrated, a low fusing continuous gum and tooth tinting, but because the appliances and specimens were illustrations of the results obtained by pupils trained under the system advocated in the proposed Institute of Dental Technology. This scheme excited much interest and very considerable approval among many of the most enthusiastic dental education reformers.

Just a line here which may do good in future. I found, in the official programme, the full title of my clinic, fully displayed, but credited to some one else. Judging from remarks called forth by similar accidents, I should have gone to the secretary general or some one in authority, protested against this wanton insult, and withdrawn from the Congress: *verb. sap.—The Dental Record.*

POPULAR ESSAYS UPON THE CARE OF THE TEETH AND MOUTH. By Victor C. Bell, A. B., D. D. S. Pages 103. Published by the author, New York. 1894.

This is a popular treatise "prepared in the hope that it may in some way be used to spread a knowledge of the importance of the dental organs among the people, especially the young, through the medium of the schools." The teaching is for the most part safe, the language is concise, and the typography excellent. Altogether it is an attractive little volume. Every effort to enlighten the public on these topics should be encouraged by the profession, and we commend this volume for that purpose.

PAMPHLETS RECEIVED.

A TREATISE ON GOLD FOIL. Hood & Reynolds, Boston.

This is a neat attractive pamphlet, beautifully designed and well illustrated. It contains useful information on the manufacture of gold foil, a subject upon which many members of the profession are not so well informed as they should be. The present treatise will prove of interest, both to students and practitioners.

PRACTICAL NOTES.

THE CRACKING OF TEETH IN SOLDERING.

BY L. P. HASKELL, D. D. S., CHICAGO.

In the last number of the REVIEW, in an article on "Setting Bridges," the remark is made by Dr. McCandless that those who say they do not crack teeth in soldering "do not know whether the teeth are cracked or not," that "they are often cracked and do not show." I have been soldering teeth for nearly fifty years; think I "know a good thing when I see it," and especially whether a tooth is cracked or not. A crack can *always* be seen when it is *dry*, but often while moisture is in, it does not appear.

He asserts that it is impossible to solder teeth in crown and bridge work without cracking more or less teeth. I reply that there is no need of teeth cracking in soldering, and furthermore that no especial care is needed to prevent it.

Many of the students at our school, coming from the dental colleges, tell me that there they have much trouble from this cause and wish to know how to prevent it. They, however, go on with their work soldering partial sets of gum teeth, crowns and bridges; some of them having no cracks and others but few, and this too in the early use of the blowpipe.

In my own experience, and taking no pains to avoid it, I do not remember the time when I ever had a tooth crack.

Perhaps a few suggestions may not be amiss. If dentists would consider that "cross" pin teeth are more apt to crack than the perpendicular or "straight" pin teeth, they would use fewer of them. They are not only more liable to crack in soldering, but are not as strong for wear. This fact is so apparent it has been a great wonder to me that at the dental depots, when inquiring for "straight" pins and wondering there were so few, I am told that "the dentists all ask for the 'cross pins.'" Use less of them, gentlemen, and you will have fewer cracks in soldering and less breakage in wear.

Do not rivet your pins, as the solder flows only upon the head of the pin; split the pin, and if the hole is larger than the pin, so much the better, for the solder flows down inside and holds the stronger.

Never heat up the case until the borax and solder have been applied. Heat up over the large burner, slowly at first, and then turning on the full head; take about one-half hour. The heat should (in case of a plate) be thrown by the blowpipe upon the plate first, so that it may be as hot as the backings, as they will heat up as a matter of course from their exposed position. Then throw the heat directly upon the solder. If necessary to apply more solder do so, but not more borax, as there is danger of thus cracking the teeth.

Many dentists experience much difficulty in soldering by using the miserable little jewelers' blowpipes, which are not at all suitable for dentists' use, there not being a sufficient volume of flame, and the mouth aperture being so small that it has to be taken inside the lips, thereby causing the muscles to become tired. To remedy this I induced the dental goods manufacturers to make a larger blowpipe—the mouth-piece to be pressed against the lips—which makes soldering much easier.

Another difficulty is found in not having a suitable soldering burner. Formerly I wound fine binding wire over the end of the gas pipe so as to break the force of the gas jet. But I am now using a burner made for the purpose, which some have called the "Haskell burner." Many use the automatic blowpipe, but I have found that beginners succeed better with the mouth blowpipe, and for my own use far prefer it.

MEMORANDA.

Dr. Thos. L. Gilmer, one of the DENTAL REVIEW staff has been appointed a member of the medical staff at St. Lukes' Free Hospital, to fill the vacancy caused by the death of Dr. W. W. Allport.

The official name is now "The Midwinter Fair Dental Congress." It is to be held at San Francisco, and the date of the meeting is June 11th to 15th inclusive. The Eastern and Middle States should be well represented.

A box party was given at McVicker's theater, to hear Miss Julia Marlowe, by Dr. C. E. Meerhoff, in honor of Dr. Haidle, Mr. Hussey, Mr. Tyng, and Mr. McKinney, while they were in the city attending the Delta Sigma Delta meeting.

On January 11th, the students of the American College of Dental Surgery attended the Schiller Opera House in a body. Their good behavior was the subject of much favorable comment. The theater was draped in their college colors—red, white, and blue.

CHICAGO DENTAL CLUB.

The following are the officers for the ensuing year: President, Dr. W. H. Taggart; Vice President, Dr. E. S. Talbot; Secretary, Dr. E. L. Clifford; Treasurer, Dr. E. M. S. Fernandez; Executive Committee, Drs. I. B. Crissman, C. N. Johnson and Arthur B. Freeman.

In the January REVIEW mention was made of a case where an irate husband had assaulted a dentist for having given his wife more pain than neccessary in filling a tooth. In justice to the dentist the further statement is made that upon investigation into the case Justice Foster fined the assailant $100 and costs, and that the dentist has brought civil suit for damages, thus proving that he is desirous of having the fullest investigation.

ILLINOIS STATE DENTAL SOCIETY.

The Thirtieth Annual meeting of the Illinois State Dental Society will be held in the Senate Chamber, Springfield, Ill., May 8, 9, 10, and 11, 1894. An interesting programme is in the course of preparation. Practitioners of Illinois and of adjoining States are cordially invited to attend.

LOUIS OTTOFY, Secretary.

ANTIDOTE FOR MORPHINE POISONING.

Dr. William Moor, a specialist on therapeutics, who is a member of the staff of the West Side German clinic in West Forty-second street, New York, has discovered that permanganate of potassium is an antidote for morphine poisoning, and that it will counteract within a reasonable lapse of time the effects of any of the salts of opium. Dr. Moor, in the presence of twelve members of the clinic, swallowed what is ordinarily a fatal dose of morphine, took his antidote and wasn't even feazed.—*Daily Paper.*

ST. LOUIS DENTAL SOCIETY.

This society will hold its annual series of clinics on March 20th, 21st and 22d, 1894. There will be reduced railroad rates and the members of the profession are cordially invited. When the St. Louis dentists announce that they are going to hold a clinic, it means something. They do nothing in a half hearted way down there. Their meetings in the past have been successful, and this one will be more so if possible. If you want to learn further particulars, write to the Corresponding Secretary, Dr. John G. Harper, 803 Pine Street, St. Louis, Mo.

DOCTORS CAN PRACTICE DENTISTRY.

Dr. P. L. Kean, of Wooster, Ohio, was recently indicted for failing to take out a license from the State Board of Dental Examiners. The case being called in court, motion was made to quash the indictment on the ground that the act requiring dentists to register specially, exempted the practice of dentistry by physicians. The court sustained the motion and the defendant was discharged.—*Western Medical Reporter.*

A CONTRIBUTION TO THE ETIOLOGY OF NEURALGIA OF THE FIFTH NERVE.

Trigeminal neuralgia (*Berl. Klin. Woch*) is caused by diseases of the ear, of the teeth, of the nose and the cavities connected with it, by diseases of the central nervous system, infections and intoxications, and by changes in the nerve itself (hyperæmia inflammation, etc.). Boennecken speaks of a form depending on disease of the teeth. It is understood that destruction caused by caries and its consequences should be remedied in every case (extraction of roots and of teeth that cannot be filled, filling of all the cavities discovered). But there is still a small number of cases where diseases of the pulp of an apparently healthy tooth may cause severe forms of neuralgia. The diagnosis in these cases can only be made by a careful examination of every tooth, cold and hot sounds, percussion, test for loss of transparency with electric light, and exploratory trepanations of the cavity of the pulp. B. has found calcareous concrements and hyperæmia in the pulp of such teeth and was able to cure the neuralgia.—*Times and Register.*

[It is encouraging to find such extracts as the foregoing in the medical journals of the day. If every medical man would read and remember this one little point it would often aid him in arriving at a diagnosis of many an "obscure case" of facial neuralgia.]

ODONTOLOGICAL SOCIETY OF CINCINNATI.

Regular meetings on the fourth Tuesday of each month.—Programme for 1893-94.—September 26, "The Widening Field of the Dental Profession," Dr. Frank Sage; October 24, Incidents of Office Practice, Exhibition of Models, etc., The Society; November 28, "Inflammation," Dr. J. Taft; December 26, "Retrospection," Dr. J. S. Cassidy; January 23, "Some Notes on Treatment of Children's Teeth," Dr. H. T. Smith; February 27, "The Future Aspect of Dental Practice," Dr. J. R. Callahan; March 27, "Salivary Calculus," Dr. M. H. Fletcher; April 24, "Is the Removal of Devitalized Tooth-Pulps Now a Necessity?" Dr. H. A. Smith; May 22, "Some Aspects of Pyorrhea-Alveolaris," Dr. O. N. Heise; June 26, "Incidents of Office Practice, Exhibitions of Models, etc.," The Society.

Officers—Dr. Grant Molyneaux, President; Dr. W. M. Williams, Vice President; Dr. H. C. Matlack, Secretary.

Board of Trustees—Dr. H. T. Smith; Dr. Frank Sage; Dr. J. R. Callahan; Dr. J. I. Taylor; Dr. H. C. Matlack.

A CONUNDRUM.

One of our prominent Chicago dentists had for guests one evening a lady—who, by the way, had sadly neglected her teeth—and her bright and budding sixteen year old daughter. The conversation had turned upon the subject of dentistry, when suddenly the daughter looked at her mother in a mischievous way and asked: "Mamma, why is your mouth like the ocean?" The mother could not tell. The girl blushed a little, hung her head, and then demurely answered: "Because it's full of shells."

The Delta Sigma Delta fraternity held its semi-annual meeting and banquet at the Grand Pacific Hotel, Thursday, January 25, 1894 The meeting and banquet were successful in every respect. Nearly seventy-five members were present. Those from a distance were Dr. Frank A. Douds, of Canton, Ohio; Dr. A W. Haidle, of Detroit, Mich.; Dr. J. T. Strathers, of Wheeling, W. Va ; and Mr. H. F. Hussey, Mr. Geo. M. Tyng, and Mr. W. C. McKinney, of Ann Arbor, Mich.

This organization is rapidly increasing in membership and influence, and will soon become, if it is not already, one of the great forces of the dental profession.

THE AWAKENING EFFECT OF COCAINE.

A few days ago a patient who had toothache, wishing to stop it immediately, secured nine grains of cocaine in solution, and took it into his mouth a little at a time, holding it till the accumulation of saliva become so abundant that he had to spit it out. He began using the cocaine in this manner at 5 P. M., and did not cease till 10.22 P. M., same evening. As it was then bedtime, he thought he would make sleep certain by taking twenty grains of chloral. Immediately after taking the latter drug, he took into his mouth some more cocaine, and went to bed. He "swashed" the cocaine solution about in his mouth awhile, then spat it out, turned on his side and tried to go to sleep. Sleep, however, did not come; on the contrary, he did not even become drowsy. Having lain awake till midnight, and not feeling sleepy at that hour, he took, as nearly as he could tell, about *one teaspoonful* of laudanum. He went to bed again and remained awake till three o'clock. Sleep lasted only four hours. Following this was headache.

I have often had my attention called to the fact that cocaine will keep patients awake at night, when the drug is administered late in the day, but I did not know that twenty grains of chloral and a teaspoonful of laudanum would not overcome "cocaine wakefulness."—*Dr. J. W. Stickler in Medical Record.*

AS OTHERS SEE US.

The following is an editorial in a recent issue of the *Medical Record:*

THE DEFECT IN THE DENTIST.—The dentists of America are the best in the world, but they are nevertheless, away behind the mark. We appreciate their ingenuity, their skill, their drills and dams, their composite fillings and artificial teeth. They make the best kind of golden crowns, but they do not deserve to wear them. This is because they do not sterilize themselves or teach their patients how to prevent caries. They are wonderful patchers-up of things half gone; but they do not show us how to prevent the going.

There is hardly a dentist (there are a few) who works in an aseptic way or uses aseptic instruments. Some do not know any better, some do not think it necessary. But both are wrong; the one class should learn, the other class should think. How many dentists can tell surely when they are dealing with a syphilitic mouth ? Yet if such a mouth is being treated we do not believe that any one would like to be the next patient though the dentist should first wash his hands.

The mouth is a rich culture ground for microbes; and caries, it is taught, is a microbic disease. Yet the dentist is content to fill the teeth, then disburse a bottle of his own special mixture of chalk, orris, and wintergreen, and tell the patient to brush the teeth *bis die*. The ordinary tooth brushing is entirely ineffective in preventing caries or disinfecting the mouth. For this purpose a genuinely antiseptic wash is needed, and this should be used for a considerable time. Just what this wash or powder should be, and just how long it should be used, is one of the things the dentist should find out. Let the American dentist devise a way of making the teeth and gums aseptic and preventing caries. He will then be greater than if he had invented a new filling or a novel drill, or transplanted a whole jawful of teeth.

HAYDEN DENTAL SOCIETY, CHICAGO.—PROGRAMME FOR 1894.

Monday, January 15, 1894, 8 p. m.
  Annual Dinnner.
  Essayist: Address by C. H. Sippel, president.
  Remarks by Dr. G. V. Black and others.
Monday, February 19, 1894, 8 p. m.
  At the office of Dr. Oakey, 603 Sixty-third street.
  Essayist: W. E. Harper.
  Subject: "Applications of Aluminum."
  Discussion opened by W. F. Michaelis.
Monday, March 19, 1894, 8 p. m.
  At the residence of Dr. Freeman, 6752 Winter street.
  Essayist: A. W. Freeman.
  Subject: "Cohesive gold."
  Discussion opened by F. S. Flagler.
Monday, April 16, 1894, 8 p. m.
  At the office of Dr. McNeil, 6900 Wentworth avenue.
  Essayist: Louis Ottofy.
  Subject: "Some thoughts on the action of gold under the plugger."
  Discussion opened by A. J. Oakey.

Monday, May 21, 1894, 8 p. m.

At the office of Dr. Michaelis, 6102 Wright street.

Essayist: A. J. Oakey.

Subject: "Treatment of pulpless teeth."

Discussion opened by R. E. Thexton.

Monday, June 18, 1894, 8 p. m.

At the office of Dr. Messenger, 6256 Wentworth avenue.

Essayist: W. F. Michaelis.

Subject: "Crown and Bridge Work."

Discussion opened by J. O. Brown.

Monday, September 17, 1894, 8 p. m.

At the office of Dr. Sippel, 625 Sixty-third street.

Essayist: J. O. Brown.

Subject: "Making of Alloys for Amalgams."

Discussion opened by W. E. Harper.

Monday, October 15, 1894, 8 p. m.

At the office of Dr. Rimes, Stewart avenue and Sixty-third street.

Essayist: John Messenger.

Subject: "Operative Dentistry."

Discussion opened by J. J. Cornelius.

Monday, November 19, 1894, 8 p. m.

At the office of Dr. Cornelius, 518 Sixty-third street.

Essayist: T. E. Powell.

Subject, "Prosthetic Dentistry."

Discussion opened by B. J. Cigrand.

Monday, December 17, 1894, 8 p. m.

At the residence of Dr. Ottofy, 5924 Honore street.

Annual Meeting.

Essayist: Hugh McNeil.

Subject: "Local Anæsthetics."

Discussion opened by M. B. Rimes.

The main purpose of this society is to improve its members. Meetings are held on the third Monday of each month, except July and August, at the offices of members, in that part of Chicago formerly known as Englewood. Visitors are cordially invited and always welcome. Any reputable dentist may become a member. The dues are one dollar per annum. Organized July 29, 1889. Incorporated August 2, 1889.

Officers, 1894: C. H. Sippel, President; John Messenger, Vice President; T. E. Powell, Secretery; W. F. Michaelis, Treasurer.

Board of Directors: A. W. Freeman (until Jan. 1895); J. J. Cornelius (until Jan. 1896); B. J. Cigrand (until Jan. 1897).

Board of Censors: T. E. Powell; J. O. Brown; W. E. Harper.

Active Members: J. O. Brown, 6301 Yale street; B. J. Cigrand, corner North and Milwaukee avenues; J. J. Cornelius, 518 Sixty-third street; W. H. Cowen, Stewart avenue and Sixty-third street; F. S. Flagler, Seventy-ninth and Wright streets; A. W. Freeman, 6752 Union avenue; W. E. Harper, 3500 State street; Hugh McNeil, 6900 Wentworth avenue; H. N. Messenger, 6256 Wentworth avenue; John Messenger, 6256 Wentworth avenue; W. F. Michaelis, 6102 Wright street; A. J. Oakey, 603 Sixty-third street; Louis Ottofy, 5924 Honore street; T. E. Powell, Sixty-fifth and Wentworth avenue; F. E. Reynolds, 6420 Dickey street; M. B. Rimes, Stewart avenue and Sixty-third street; C H. Sippel, 625 Sixty-third street; R. E. Thexton, 6701 State street. Honorary member: G. V. Black, Jacksonville, Ill.

To the Editor of the Dental Review:

Enclosed please find part of the questions and instructions to candidates of the Illinois State Board of Dental Examiners for publication in the February number of your esteemed journal. The balance of the questions will be ready for the next number of the REVIEW. In publishing these questions which we think cover almost everything pertaining to dentistry, we follow the long established example of European Universities. Thanking you for favors extended to this board, by publishing the resolutions, etc. Fraternally Yours,

FRITZ W. HUXMANN, D. D. S., Sec'y.

INSTRUCTIONS TO CANDIDATES FOR EXAMINATION.

All the questions on the following list are contained in the different receptacles of which there is one for each branch of the examination, as: Anatomy, Histology, &c. Each candidate will draw one question at the time, of each subject, which he will be expected to answer exhaustively in writing in the presence of the board. One question answered in the above sense will be considered sufficient. If it is not answered in its full scope, the board may require the candidate to draw another question and answer it in the above sense. Eighty per cent of the answer must be satisfactory for a successful examination. The candidate must construct a piece of metal work, and perform a dental operation on a patient to the satisfaction of the board, if the board deems it necessary, before he or she can be examined in the theoretical branches.

G. A. McMillen, D. D. S., President, Alton; L. L. Davis, D. D. S., Chicago; Fletcher Irons, D. D. S., Mt. Vernon; Garrett Newkirk, M. D., Chicago; Fritz W. Huxmann, D. D. S., Secretary, Schiller Building, Chicago, Illinois State Board of Dental Examiners.

LIST OF QUESTIONS.—ANATOMY. DR. L. L. DAVIS, EXAMINER.

1. Cavum oris. 2. Articulation of the mandibula. 3. Development of bone structure. 4. Superior maxillary. 5. Inferior maxillary. 6. Muscles of the superior maxillary. 7. Muscles of the mandibula. 8. Nervus facialis. 9. Nervus trigeminus. 10. Maxillary sinus and its mucous membrane. 11 Sputum glands and their ducts. 12. Muscles of the tongue.

PHYSIOLOGY. DR. F. W. HUXMANN, EXAMINER.

1. Process of the digestion of food from the time it enters the mouth until it leaves the body. 2. Give the constituents of the blood. 3. The circulation. 4. The nervous system. 5. The lymphatic system. 6. The liver. 7. The kidney. 8. Respiration.

PATHOLOGY. DR. F. W. HUXMANN, EXAMINER.

1. Inflammation. 2. Hyperæsthesia. 3. Ætiology of caries. 4. Diseases of dental pulp. 5. Predisposing causes of dental caries. 6. Alveolar abscess. 7. Pericementitis. 8. Exostosis. 9. Secondary dentine and pulp globules. 10.

Dental calculi. 11. Pyorrhœa alveolaris. 12. Pus. 13. Aphthous stomatitis. 14. Indications and counterindications of extraction. 15. Dental anomalies. 16. Diseases of the maxillary sinus. 17. Ostitis and osteomyelitis. 18. Tetanus and trismus.

THERAPEUTICS. DR. F. W. HUXMANN, EXAMINER.

1. Prophylaxis. 2. Palliative measures. 3. Therapeutics of inflammation. 4. Therapeutics of abscesses with fistulous openings and blind abscesses. 5. Therapeutics of acute and chronic pulpitis. 6. Therapeutics of pyorrhœa alveolaris. 7. Therapeutics of gingivitis. 8. Therapeutics of dental caries. 9. Therapeutics of osteomyelitis. 10. Therapeutics of hæmorrhage in subjects of hæmorrhagic diathesis. 11. Therapeutics of aphthæ.

MATERIA MEDICA. DR. L. L. DAVIS, EXAMINER.

1. Ether. 2. Argentum nitricum. 3. Phenol. 4. Chloroform. 5. Potassii chloras. 6. Creosote. 7. Narcotica. 8. Iodoform. 9. Hydrargyrum. 10. Dentifrices. 11. Extractum aconiti. 12. Acidum tannicum. 13. Acidum nitricum. 14. Acidum hydrochloratum. 15. Zinkum chloratum. 16. Protoxide of nitrogen. 17. Dental essential oils.

HISTORY AND EMBRYOLOGY. DR. L. L. DAVIS, EXAMINER.

1. Name and describe the hard tissues of teeth. 2. Give contents of pulp chamber and describe connection between dentine and pulp. 3. From what layer of tissue is the enamel organ developed? (2.) Describe process. 4. How is the dental papilla developed and from what tissue? 5. Describe the process of calcification in enamel and dentine. 6. How early in the fœtal life does calcification begin? (2.) Which tooth tissue first? (3.) Give date for all the temporary teeth. 7. Describe condition of tooth germs in fœtus at twenty-fifth week of intra-uterine life. 8. What is the condition of root of tooth at time of eruption? (2.) Give date of eruption of deciduous teeth. 9. Give date of eruption of the permanent teeth. 10. Describe the process by which the temporary teeth are removed.

OPERATIVE DENTISTRY. DR. L. L. DAVIS, EXAMINER.

1. The interproximate space. Its importance and how it shall be preserved. 2. Preparation of typical proximate cavities in molars, bicuspids, and incisors. 3. Treatment of enamel margins prior to filling. 4. Filling materials. 5. Mallets and malleting. 6. Filling teeth with gold, with tin, with amalgam. 7. Contour fillings in anterior teeth. 8. The matrix. 9. Capping pulps. 10. Destroying pulps, and filling roots.

[The list of questions on metallurgy, etc., will be published in the next number of the Review.]

We clip the following from the *Pacific Coast Dentist* for January and commend it to the consideration of our readers. The *P. C. D.* promises a daily edition during the congress.

THE MIDWINTER FAIR DENTAL CONGRESS.

On another page we have chronicled the change in the name of the proposed dental convention to be held in San Francisco during June next, together with a slight change in the time of meeting.

The official name is now "The Midwinter Fair Dental Congress," and the time of meeting is June 11th to 15th, 1894, inclusive.

While we do not believe as a rule, such changes are wise, the time is yet so distant, and so little has yet been accomplished by way of advertising the meeting, that we are persuaded the change will do little or no harm.

The original name, "Midwinter Dental Convention of the Pacific Slope," was unmistakably a poor choice. It was too long and unwieldy, and ambiguous and misleading. It was said that people in the East had obtained an erroneous idea of our conception of the seasons; that our winter and summer were so much alike that we were compelled to seek the counsel of the calendar to determine what the season really was.

Whatever the name may be, and whenever the time of holding the meeting is, there will be a goodly number in attendance. Of this fact we are convinced by the general interest manifested throughout the Slope and most of the East

The various committees have done splendid work, and will continue to busy themselves in their preparations for the grandest dental meeting ever known this side of the Mississippi river. As a matter of fact, it is sure to have no greater predecessor than the Columbian Congress so recently held.

On Thursday evening, January 18, another meeting of the committee will be held at the office of Dr. Thomas N. Iglehart, No. 713 Sutter Street, and it is hoped that every one interested in the success of the congress will make it a point to be present, as there are still numerous committees to be appointed and much business to consider. In the meantime, just as we go to press, we are in receipt of an invitation to a banquet of the various committeemen. This will no doubt be a delightful evening and accomplish much by way of promoting enthusiasm.

The canvassing committee is hard at work securing the signatures of those who intend to give the congress their support, if not presence; and it is sincerely hoped that no ethical, progressive dentist will deny his name. Look to it that you are identified with the meeting in some way.

THE

DENTAL REVIEW.

Vol. VIII. CHICAGO, MARCH, 15, 1894. No. 3

ORIGINAL COMMUNICATIONS.

Relative to Immediate Root Filling, and A Few Items Concerning the Management of Teeth With Pulps Dead Before Treatment.*

By Edmund Noyes, D. D. S , Chicago.

The more I have thought about these subjects, and read about them, the more impossible it appears to say anything new, and the only excuse for this paper is to say that as long as we see repetitions of incorrect, fallacious or misleading theories and opinions regarding them, and the advocacy of inadequate, injurious or impracticable modes of procedure; so long it will be necessary and useful to repeat correct theories and opinions, and describe suitable modes of operating. No attempt will be made to cover the whole field, for this paper must be short, and doubtless there will be opportunity in the discussion for some of you to mention items that you may think more important than those I shall describe.

Immediate root filling may be defined as the filling of roots at the first sitting when anything is done within the pulp-chamber or canals, or, if a pulp has been devitalized, filling at the same sitting when the pulp is removed.

The subject of immediate root filling has often been discussed with reference to the possibility of it, and the cases in which it can be done without danger of disastrous consequences following, rather than upon the broader grounds of its suitability, convenience, and general utility.

A paper on this subject was read before the Illinois State

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*Read before the Chicago Dental Society, Feb. 6, 1894.

Dental Society at its last meeting, which discussed very briefly the question "Is Immediate Root Filling Advisable :

1. After heroic extirpation of a live pulp ?
2. After removing a devitalized pulp ?
3. After removing a putrescent pulp ?
4. When there is peridental membrane abscess with fistulous opening?
5. The same, without fistulous opening? (Blind abscess)."

The essay gave an affirmative answer to each proposition. These cases appear to include about all diseased teeth requiring root fillings, except those presenting themselves with acute pericementitis or acute abscess. Whether the essayist would also fill these at the first sitting did not certainly appear from his paper, but it is hard to see why he should not, unless deterred by the illness of the patient or the soreness of the tooth, from making a sitting sufficiently long to accomplish it.*

The first two heads, namely, "After extirpation of a live pulp," and "After removing a devitalized pulp," are so nearly alike in their relations to this question that they may be considered together. These cases furnish the most frequent and suitable opportunities for immediate root fillings, and there are no serious objections to them if required by convenience or necessity. However, when we remember that a large proportion of root fillings have to be made in bicuspids and molars, and consider the difficulty of getting away all portions of the pulps from small roots, we often find that root filling "After the removal of all pulp tissue" does not always prove to be so very "Immediate." Probably the recently described methods of cleansing pulp canals by means of kalium-natrium, or dilute sulphuric acid, may make the accomplishment of it at one sitting more practicable than heretofore.

The objections to immediate filling in these cases (after extirpation is complete) relate to the difficulty of controlling hemorrhage or exudation, and consequently of obtaining complete dryness of the canals, to the irritability or sensitiveness of the parts at the apex, manifested by severe pain during the introduction of the filling, and which is apt to be much greater if the filling is carried to the apex as it should be, than if it stops short of its proper destination, and lastly the liability of greater soreness and discomfort following the operation, than would be the case if delayed till another sitting.

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*Dr. J. R. Clayton in a paper before the Indiana Society last June, describes several cases, among which was one with very acute pericementitis, and one with acute blind abscess, both of which were successful. (He mentions no failures.)

There are many cases in which these objections do not exist, or may be easily overcome, and many others in which they *may* be overcome or endured if it is desirable or necessary, and there can be no universal rule of good practice laid down, but every operator will form his own habits in the matter, in accordance with his preferences, or the special requirements of his particular practice. It is likely that country practitioners will complete these operations at once in a much larger proportion of cases than those in cities, whose patients are more accessible, and in the habit of being more fully subject to the requirements of their dentist in the matter of numerous sittings.

The third class of cases, those having putrescent pulps, should have a broader definition, if intended (as appeared from its treatment in the paper) to cover the cases all the way between, but not including, those devitalized and filled without sepsis, and those in which an abscess has been formed. The first of the subheads in this class is suppurating pulps; the second, putrescent pulps; and a third, those in which the decomposition and removal of the pulp is complete, but without the formation of an abscess. Each of these three subdivisions implies that the pulp chamber or root canal is open, or has been open.

The most significant and important thing about all these cases is sepsis or infection, and there are two decisive objections against immediate root filling, unless for some reason the necessity for it is so urgent as to justify the taking of considerable risk.

The first objection is in the fact that disinfection, to be thorough and trustworthy, requires time for its accomplishment. The second objection is the impossibility of knowing certainly, whether the apical space has become infected, or whether it is infected during the operation, which is liable to happen, notwithstanding all possible care, if the work is completed at the first sitting. A very large proportion of these cases will do well if immediately filled, and some of them are so near like the preceding ones as really to belong with them. For instance, if a suppurating or putrescent pulp shows some life, and its removal is followed by somewhat free hemorrhage, the portion next the apex appearing to be in a nearly normal condition, there would be little fear of trouble if immediately filled. If, however, the whole root canal appears to be in a septic condition, it cannot be cleaned and filled at once without an unjustifiable risk of subsequent trouble that could probably be avoided by taking more time.

The first point to be gained in these cases is the disinfection of the root canals. This is more quickly and surely accomplished after the removal of so much of their contents as can be got away without danger of forcing anything through the foramina. Then some strong and diffusible antiseptic should be placed in them for some days. (Free diffusibility is more important than great strength or concentration).

This application may usually be tightly closed in by a gutta-percha stopping, though a vent will sometimes prove necessary. At the second sitting the canals may usually be safely cleaned out to the foramina, though I have seen cases in which oil cassia and myrtol had been tightly enclosed for a week, without developing the least trouble, which yet became acutely inflamed, and in some instances formed abscesses, after thorough cleaning and treatment at the second sitting, showing, (probably), that the disinfection of the apical portions of the root-canals had not been so complete as was expected. (There may be some cases in which acute peridental inflammation is caused by the antiseptic instead of by infection, but if that is the cause, it will not develop into an abscess).

The third sub-class above mentioned, (in which the decomposition and removal of the pulp are complete), are not always certainly distinguishable from those having blind abscesses, and the same general line of treatment usually proves appropriate in either case, though if there is active formation of pus, or if it becomes active under the stimulation of treatment, a tight closing in of the medicines is, of course, impracticable at first. That anybody should seriously advocate the immediate filling of roots that will not bear a tight temporary stopping for half a day without severe pain and inflammation, which is promptly relieved by removal of the stopping, seems incomprehensible. Perhaps no one does advocate it in just these cases, but some certainly do in cases that are impossible to distinguish from these at the first sitting. If there is a dead pulp, with the peridental membrane and the tissues at the apical space in a normal condition, we have only to remove the corpse and disinfect the chamber and canals, but if the apical tissues are diseased, we need in addition to have them cured before we fill the roots, or so far in the way to recovery that the remainder of the process can be depended upon to complete itself. This would seem to be so reasonable a proposition as to need no argument, but it has been urged by some that the foramen of a root is usually so small as not to permit the drainage of a blind abscess through it, or the diffusion of medicines through it to the diseased apical tissues. This is undoubtedly the case in a few instances, but clinical observation is conclusive to the contrary in a very large proportion of cases.

In regard to the immediate filling of teeth with blind abscesses, I will quote from the essay already frequently referred to: "Diagnosis of blind abscess of alveolar process is largely guesswork, because the single item of a wet canal does not prove the presence of pus, nor the existence of an abscess cavity. When blind abscess exists, the accumulation of pus is so very slight that it will cease altogether after the cause has been removed by closing the apical end of the pulp canal. In nearly all such cases, prompt closure at the apex will be followed by no noticeable inflammation, if proper care be observed in manipulation within the pulp canal." It is true that the diagnosis of a chronic and quiescent blind abscess is sometimes difficult, and we may sometimes treat a pulpless tooth till assured of its healthy condition, and fill it, without ever certainly knowing whether a small blind abscess has been cured during the treatment, or whether none ever existed, but there are rather numerous instances in which, after removal of the contents of the pulp canal, the discharge of pus is abundantly sufficient to make the diagnosis certain, and most of us have often passed a fine probe through the foramen into acute abscesses of this sort and seen them discharge so large a quantity of pus through the pulp canal as very effectually to controvert the statement that "when blind abscess exists, the accumulation of pus is so *very slight* that it will cease altogether after the cause has been removed by closing the apical end of the pulp canal." It must never be forgotten that although the contents of the pulp chamber and canals were the first cause of the abscess, when once established, the contents of the abscess cavity may constitute a continuing cause, which it is as necessary to remove, surgically or therapeutically, as to remove that part of the cause contained within the pulp chamber and canals.

I will quote again: "In all cases the apical end of a pulp canal should be permanently closed as soon as the canal is laudable—that is to say—as soon as free from pus or other fluid, and all obstructive matter." "A clear, clean canal is always laudable." I think we can all agree to this if we add the requirement, that by taking sufficient time, and giving proper treatment, we have ascertained that the canal will remain laudable. The statement of the essayist immediately following does not fullfil that requirement, for he says, "I would remove all obstructive matter from the canal, absorb moisture from it till no more appears, and immediately and permanently fill the canal." It is true that a good many blind abscesses will get well after being once pretty thoroughly drained, and having the canal permanently closed, but no man can certainly tell which ones will fail to do so, and it would seem inexcusable to take so great a risk when there is no necessity for it. The cases of blind abscess are the ones in which immediate root filling is most dangerous and least justifiable. In closing the discussion, the essayist quoted from, referring to a remark by Dr. Black to the effect that "Evidence of skill in a dentist is not so much in his success in the large majority of cases that are likely to do well, as with the minority which will give trouble to the patient unless very skillfully handled;" said, "Dr. Black has divided immediate root filling cases into majority and minority, admitting that the large majority are successful. * * * *He* did not state what the minority is. Close observation for twelve years leads *me* to estimate the minority at ten per cent. There is no political party under the sun that cares a rap for a minority that represents only ten per cent." This last comparison is an unfortunate one, for in cases of immediate root filling the minority does not feel bound by the action of the majority, and I assure you, gentlemen, that any man who is obliged to confess to a failure of ten per cent of all his cases of root filling (for this essayist appears to fill everything "immediately") must have urgent need to revise his modes of practice in this particular, and if we remember that this ten per cent of failures must be nearly all included in those having putrescent pulps, foul canals, or blind abscesses, making the proportion of failures probably at least twice or three times as great for those, we hardly need stronger argument against immediate root filling as a universal practice, than this confession by one of its advocates.

We find a few teeth with dead pulps that are so free from decay as to make it certain that the pulp chambers have never been opened. We do not always feel called upon to disturb them, but frequently we do. In a majority of them sepsis is plainly enough evident, and they must be treated accordingly. Some of them appear to be aseptic, but are not really so, and the proportion in which we may be so sure of it as to fill immediately, is rather small.

The immediate filling of teeth with abscesses having fistulous openings relates to the disinfection of the pulp chamber and canals, as in all other cases involving sepsis, and to the convenience of using the root canals as channels for the conveyance of force or pressure for the evacuation of the abscess cavities, or the introduction of medicines.

There are many teeth in which the foramina are so small as to be useless for these purposes, and they may as well be closed as soon as disinfected, but there are many others in which the root canal and the fistula furnish openings at both ends of the abscess cavity and make it possible to give them much more thorough and successful treatment than would be the case if the canals were closed. This is so much so that a very large proportion of them will get well after one thorough treatment, and many operators feel so sure of that as to fill them at once, but some of them will not get well after one treatment, and it is just as easy to find out whether they will, before we fill them as afterward.

Immediate root filling is theoretically possible, and even entirely practicable if circumstances require it, in a very much larger number of cases than those in which it is clinically expedient. Many careful or cautious operators, who can control their patients, will practice it very seldom indeed. Others, more bold, or whose practice may make it more necessary, will do so very often, but all should draw the line, strictly, at those teeth having the entire pulp canals in a septic condition.

Disinfection of teeth is usually considered to relate only, or at least chiefly, to the pulp chambers and canals. Occasional appearances seem to indicate instances in which the dentine itself (the tubuli contents) has become so foul as to require that disinfection reach through its substance. It is usually supposed, I believe, that the tubuli of normal dentine are too small to admit of septic germs, but they certainly do sometimes admit freely the products of decomposition, as is evident by the great change of color. Of course if the dentine is to be disinfected, the time required is likely to be greater than is necessary to disinfect the chamber and canals. Some work lately done by Dr. Black, which I trust we shall hear about in due time, seems to indicate that a very considerable amount of organic matter can readily be dried out of an extracted tooth and replaced by water. That diffusibility and displacement are practicable to some extent between the foul contents of dentinal tubuli and fluids or medicines that can be placed in the pulp chamber, is evident from what we often accomplish in the bleaching of teeth. Whether, with the tooth in the mouth, the tubuli contents can be removed to any great extent by drying may be doubtful. There is little doubt that the dentine will readily absorb something else to take the place of whatever portion of the tubuli contents *can* be dried out of them. Clinically it is evident that in most cases we need not give ourselves very much concern about the tubuli contents beyond what is accomplished by the disinfectants used with direct reference to the pulp chamber and canals. Of course such medicines must not be coagulants, or we cannot expect them to accomplish *anything* in the disinfection of dentine.

It has occurred to me at the last moment that I might have saved much time by simply warning you of the great difference there is between the great State of Indiana and the equally great State of Illinois. This will more fully appear by a short quotation from a paper and another from remarks in the discussion following it, both by Dr. J. R. Clayton, at the meeting of the Indiana State Society last June.

"For the past three years my practice has been most radically changed, arguing in the case of pulps purposely destroyed and removed that the sooner the parts were turned over to nature for rest and restoration the better; that in case of putrescent pulps, if they were giving no trouble while in the canal none would result when the pulp was removed and the canal cleansed; and furthermore, if pain had been set up in the peridental membrane the whole cause was in the putrescence of the pulp, and by removing the cause the effect would cease, and now every pulp canal is cleansed, disinfected, dried and filled at the same sitting, and the success attained has been such that no more thought is given to the future of such operations than to the filling of the plainest molar cavity."

In the discussion he said (in reply to a question about drying roots), "The anterior roots of the lower molars and the buccal roots of the upper molars I do not disturb. I make no effort whatever to get into the buccal roots of the upper molars. *I believe I have never seen an abscess on the buccal surface of an upper molar.*" (Italics mine.)

In Indiana, therefore, where there are no abscesses on the buccal roots of upper molars, immediate root filling appears to be a great success, and may, perhaps, be practiced with impunity. But in Illinois such abscesses are very common, and experience and observation have taught us that immediate root filling must be practiced sparingly and with good judgment.

MARGINAL LINES OF FILLINGS.*

BY GEORGE J. DENNIS, M. D., D. D. S., CHICAGO

An apology is probably due this society for the presentation of a subject which has been so ably treated under other heads by writers of rare ability and experience. The writer in this instance offers as his excuse the fact that in his own practice, the subject has become one of absorbing interest, because of its practical nature, because of the failure of fillings he has noted, not only of his own production, but of others eminent in the profession, and because some of his own views have been at variance with one writer, and coincident with another for whom he has the deepest regard ; he believes as well, that with the proper shaping of the marginal or border lines of fillings, many if not all of the failures of proximate fillings may be obviated.

As the subject has been studied, the hope of treating it exhaustively in one paper has been abandoned, and the thought will be confined to the marginal lines of those simpler proximate fillings of the six anterior teeth, which are met with every day in office practice.

Of the papers which have appeared recently touching upon this subject, the one by Dr. Rodrigues Ottolengui, entitled, "Methods of Filling Teeth," published in the regular issues of the

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*Read before the Chicago Dental Society, February 6th, 1894.

Dental Cosmos, through part of the years 1891 and 1892; and the other by Dr. G. V. Black, entitled, "Treatment of Enamel Margins," published in the same journal during the year 1891, are the only ones of importance. These two writers seem to have disagreed in their treatment of marginal lines of fillings in the anterior teeth, and it is hoped that the discussion this evening will bring out a proper line of treatment when two such eminent writers disagree.

First, in logical order, according to their simplicity, may be studied those very small cavities, usually called pin head cavities, which although so styled, are seldom so large on their external surfaces. These cavities are said by Dr. Ottolengui, to appear directly at the "contact points" of the approximating teeth, while Dr. Black whom all recognize as an exceedingly acute observer, asserts that they do not appear at the contact points, but at points just rootwise of the contact points. The observations of the writer have been similar to those of Dr. Black, that these decays do appear at points just beyond the contact points toward the roots of the teeth. From this point, decay progresses in all directions lingually and labially, and cervically and morsally.

The progress, as a rule, is more rapid and extensive in the cervical and lingual directions than in the labial or morsal directions. This fact is believed to be due to causes mentioned by Dr. Black in the same paper, page 349. Dr. Ottolengui states, Vol. XXXIII., page 622, of the *Cosmos*, that "in the six anterior teeth the approximal cavities should be prepared as small as possible, consistent with reaching strong edges." He argues, after making this statement, that they do not possess "self cleansing surfaces" when extended until the marginal lines lie without the point of contact, as stated by Dr. Black, and quibbles over the use of the term, self cleansing. He says also that they should be made as small as possible for æsthetic reasons, because less of the filling material is visible when the cavities are prepared after this manner, than when prepared by extending the margins so that the points of contact and the points of first decay shall be entirely included within the marginal lines. He states practically that he permits the margins of his fillings of this class to lie against the adjoining teeth. Thus, even if the fillings are made as small as possible for æsthetic reasons, they must, by reason of the inherent weakness of the margins of his fillings (be they ever so perfect), invite a recurrence of decay at those points, where he himself says decay makes its first appearance. As for the argument based on æsthetic considerations, this can be passed by lightly, for every observing dentist, as well as his observing patients, has noted the rapidity with which these small fillings in proximate surfaces, discolor and become almost as black as oxidized amalgam fillings in the same location. If, for no other reason than that of the æsthetic qualities for which Dr. Ottolengui argues so strongly in his papers, these cavities should be extended so that the labial margins should present a clean polished gold appearance, rather than they should show discoloration, either by reason of real discoloration, or on account of the peculiar effect of lights and shadows at these points.

For prevention of decay, it is almost axiomatic that the marginal lines of these small cavities should be extended, not only beyond the contact points, but beyond the points of first decay, which Dr. Black states, lie just rootwise of the contact points.

If a slight digression may be permitted, not only should the marginal lines of these fillings be extended so that every part shall be exposed to the cleansing action of brush or pick, but the contour of these fillings, small as they are, should be exaggerated, so that placed in approximating teeth, they shall only touch at the most central points of their surfaces. This may be done without marring the appearance, for the rays of light which fall on such fillings, may be so regulated that the real projection of the filling beyond the natural tooth contour will not be apparent. This principle was first suggested by Dr. Edmund Noyes, in connection with large contour fillings, in which a real diminution of the size of the fillings, could be made without affecting their apparent size.

The next class of cavities in these surfaces are those in which decay has progressed until both the contact points and points of first decay have been passed, without involvement of either the labial or lingual plates of enamel, although the dentine next the lingual plate is exceedingly thin. In these cavities again extension of the margins is necessary until the lingual as well as the labial plates of enamel are entirely protected by the gold from contact with the approximating teeth. These lingual margins are so often permitted to lie in contact with the adjoining teeth that especial attention should be called to them, for probably a greater percentage of failures may be found along these margins in this class of cavities than in the margins of the larger cavities. It is a great temptation to utilize the lingual plates in these cavities as walls for the fillings without cutting away the edges until they are strong and solid and the margins are clear of the approximating teeth. Too often the disk is passed between the teeth when these cavities present themselves and the margins prepared so that all except possibly the labial margins are in contact with the teeth which approximate them.

The next class of cavities are those in which decay has continued until the lingual walls have been broken down to a considerable extent while the labial remain comparatively firm. In this class the marginal lines should be extended until enamel walls are obtained, fully supported by dentine, and until the entire marginal line of the cavity is clear of the next tooth. These lingual margins should be also extended with regard to the lingual fossæ found in the central and lateral incisors, and when any tendency toward sulci is noted, they should be extended to include them.

Next, have been classed together those cavities in which the labial as well as the lingual enamels have been broken away, with only the mesio-morsal or disto-morsal angles remaining, although sufficiently supported by dentine to preclude the necessity of cutting off these angles. The margins in these cases should be trimmed in much the same manner as with the previous class, having regard for the strength of enamel at the mesio- and disto-morsal angles, with sufficient bevel at these points to preclude the feather edge of gold which is apt to draw away from the margin. Here again in the filling, the contact points should be restored in gold for the preservation of tooth structure at the margins.

To the next class belong those in which decay has caused the the complete breaking down of the mesio-morsal or disto-morsal angles. They should be formed entirely with regard to the strength of the enamel and its lines of cleavage. As with the other classes, the margins must be extended until all the lines are away from contact with the opposing teeth.

Here, the lines may be so formed that a shoulder results near the cervical margin which greatly assists in retaining the filling in place.

In conclusion, it is admitted that all the cavities in these locations have not been considered. So many varieties present themselves that even in a more lengthy article, all the points could not be considered. It is hoped, however, that the idea of extension of the marginal lines of cavities for æsthetic as well as utilitarian reasons, has been clearly set forth.

If any of the statements have seemed dogmatic, they have not been asserted in the spirit of dogmatism, but for the purpose of awakening interest in a method of treatment which is believed to have been greatly neglected in practice.

ANSWERS TO QUESTIONS CONCERNING ANÆSTHETICS AND OBTUNDENTS.

BY A. C. HEWETT, M. D., CHICAGO, ILL.

Since the adjournment of the Columbian Dental Congress, I have received so many letters of inquiry of which the following questions are, in substance, given, concerning cocaine pigment, etc., etc., that I find it practically impossible to give personal answers. I ask my esteemed correspondents to accept answers here given as if to them personally addressed, and I may add, that what I have given below, I have proven. During the week in which I have written this article I have twice operated for "imprisoned third molars." Cocaine pigment and chloroform, as advised, rendered one operation "Perfectly without pain, but I knew all the while." (I quote), the other attended with only slight pain. "But not much—no shock." Very few teeth should be extracted. Many roots should be saved and crowned. It is, however, necessary sometimes to remove teeth and roots, as it is sometimes needful to amputate limbs; both, when needed, should be done painlessly by wise, skilled dentists and surgeons.

Q. 1. I understand you advocate painless dentistry. Is it possible and practicable?

A. Absolute painlessness in dental operations is scarcely attainable. Relative painlessness is possible, desirable, practical, profitable to the operator, and appreciated by the patient.

Q. 2. If yes, 1st, What agents do you employ? 2d. What is the method you advise?

A. Avoid thrusting a searcher on an exposed pulp, or sensitive dentine, without an obtundent, previously applied. Cocaine and adjuvants for the superficial soft tissues, and chloroform to obtund dentinal fibrils, and those of deeper structures.

2d. To prepare for a careful examination for pulp exposure and sensitive dentine, a wash prepared as follows is reliable :

COMPOUND LISTERINE OBTUNDENT.

℞	Sol. hyd. cocaine (4 per cent)	fl oz.iii.
	Glycerine................	flʒii.
	Listerine ad...............	fl oz.iv.
	M.	

Apply to gums and necks of teeth to remove all debris and mucus, with tooth brush, or with brush or sponge applicator; immediately wipe out deep cavities with absorbent cotton, and moisten the cavities with "com. cocaine pigment."

To prepare gingivæ and peridentium, to tolerate clamps, separators, gilling twine, scalers and pyorrhœal blades, cleanse the necks of teeth and the gums with the compound listerine obtundent, or with pyrozone, 3 per cent or less, then dry and apply cocaine pigment, working it well along the necks of teeth, into pockets and into gum borders; to operate (surgically) in and about the oral cavity and to extract teeth and roots painlessly, the patient remaining conscious and retaining voluntary motion, cleanse the parts as above directed, DRY THEM, and apply the pigment (for extracting) as described in the REVIEW, June, '93, page 466, and while waiting for the pigment to anæsthetize the parts administer chloroform as taught in said REVIEW, pp. 468 and 469.

To drill, bur or grind sensitive dentine, open pulp chambers, amputate or extract live pulps painlessly, proceed precisely as directed above for extracting and operating surgically.

Painless extraction of teeth and oral surgery by local anæsthesia is possible and practicable by hypodermic injection of cocaine. The following formula gives a hypodermic mixture, safe and effective, from the use of which, so far, no injurious or untoward results have supervened. Painless amputation of the finger, painless excision of a portion of a rib, and numerous other operations of minor surgery, unattended by pain, attest its value :

COMPOUND STROPHANTHIN HYPODERMICA.

℞	Sulp. atropin...............	gr. 1-2.
	Strophanthin	gr. 1-5.
	Acid carbolic (95 per cent)...	grs. 5.
	Hydro. chlor. cocaine	grs. 20.
	Aq dist. qs...............	fl oz. 1.
	M.	

Sig. Four to six drops, hypodermically, for local anæsthesia.

Q. Is there any soreness or sloughing after the use of the cocaine pigment?

A. None whatever.

Q. Is any special brand of cocaine preferred?

A. If by "brand" is meant manufacture, I know of none especially to be preferred above all others. No "brand" should be trusted unless the drug is in clean prisms, of the smaller rhombic system—crystals free from powder or dust.

Q. Is there nausea in the use of the pigment?

A. None whatever.

Q. Is there any danger in using the pigment on extremely nervous persons, or those suffering from heart trouble?

A. Not the least. Care should be taken that none of the pigment reaches the stomach.

Q. Do you obtund sensitive dentine with the pigment by applying it in contact?

A. With but varied results and partial success, if the dentine is cleansed and dessicated, the pigment applied and evaporated by a blast of hot air, good results follow, especially if the soft tissues surrounding the tooth have been treated with the pigment previously.

Q. Is the pigment as effective as the four per cent of cocaine injected?

A. I think not, but there is great danger in hypodermic injection of any per cent solution of cocaine unguarded by some escharotic or coagulant. An injection will reach nerve fibrilla more quickly than any topical application.

Q. Is there any care required to prevent the deterioration of the pigment?

A. None. The last drop is as good as the first.

Q. Does the pigment act on abscessed teeth?

A. By its skillful use, abscessed teeth and roots can be painlessly removed. Of course congestive tissues absorb less rapidly than those in a normal condition, hence in these cases the great value of the obtundent use of chloroform with the pigment.

Q. Is there not danger from shock in operations during partial anæsthesia by the chloroform and the pigment, as you advise?

A. Not the slightest from shock caused by extraction, burring, or cutting, consequent upon the partial anæsthesia, but there is danger from shock in giving chloroform, ether or nitrous oxide, if avalanched upon the peripheral nerves; and there is danger of shock in operations without anæsthesia, partial or general.

It perhaps is as well here as elsewhere to enlarge upon this answer. *Argumentum ad judicium* as well as dogmatically. I am aware that this answer is in flat contradiction to the teaching of scientists of Europe and America, and opposed to the consensus of opinion of experts (?) upon this subject; nevertheless I modestly but unwaveringly maintain the correctness of the answer.

I assert that the first effect perceivable of an anæsthetic given as I advise so gradually as not to irritate the nerves of the nose, throat and lungs, is upon the ultimate fibrils of the sensory nerves. Any educated person can verify this by a trial upon himself. Long before the brain becomes clouded, distinct sensations can be noticed in the extremities, especially at finger-tips and toe-ends, and long before conciousness and volition are held in abeyance by any true anæsthetic, capacity to suffer pain is abridged. If this be demonstrably true, and I reassert it, then what logic can support the proposition that partial anæsthesia (insensibility) augments the consequence of pain-shock ? Every tyro in anæsthetics knows that inhalations of chloroform, ether or nitrous oxide will suspend for the time the "aching" of the felon, carbuncle, or phlegmon, and mitigate the fiercer anguish of local neuralgias, and of angina pectoris even. What senseless sophistry then to argue that an obtunding of the fibrils through which the knife passes increases their ability to alarm the brain and depress ganglionic force. To my mind the fact is, when deaths occur as they have too often in the earlier stage of operations, shock from the anæsthetic does what the sand bag in the hand of a footpad accomplishes, and often more speedily than by that fearful weapon. The shock is from the chloroform and not the lancet, bistoury, or catling. It is with some pride and a great degree of satisfaction that in the use of chloroform earlier, and later cocaine and chloroform, for more than twenty-five years, not a single accident has marred my admiration for, and growing faith in, the safety and advisability of anæsthetics in dental as well as surgical practice; but I wish to emphasize the caution I now, and here give, that *shock must be avoided* in giving the chosen anæsthetic. If my way is not followed, then some other way should be chosen equally gradual, and hat will admit a large amount of air with the vaporized drug. I will not be responsible if my directions are not followed and my caution above given is not heeded.

Q. Is the pigment efficient and safe as a hypodermic?

A. Of its efficiency and safety, I have not a doubt, but I advise in preference the compound strophanthin hypodermica. As a hypodermic, it is more readily absorbed by the surrounding tissues, has been proven safe, and forceful, and is less expensive.

Q. What care should be used and what dangers attend hypodermic injections of cocaine?

A. First, never thrust the needle into or through a blood vessel of any size. Thrombosis, or embolism would be the least of the sequelæ liable to supervene.

Second, never pierce the trunk of a nerve of any size sufficient to be transfixed, or severed by the needle. Gloso-pharyngeal, lingual, or facial paralysis is liable to follow, all of which have come under my notice, subsequent upon operations by careless dentists.

Third, under no circumstances throw a solution of cocaine of any strength among cellular tissues unless combined with coagulants, or escharotics of sufficient strength to circumscribe and localize the injection, and bar it from the systemic circulation.

Q. Is there not danger to the patient and operator in the common use of chloroform and cocaine whereby either or both shall become victims of the "habit?"

A. To the patient not the slightest; cocaine uncombined is bitter to the taste and not fascinating as used for dental purposes; combined as advised by me, pungency and viscidity render it anything but agreeable to taste or in effect.

To the dentist of to-day, with glowing records of experiments before his eyes, its toxic dangers stake-lighted, bell-buoyed, and fog-horned, if there is danger to him, then dementia and parallaxis cannot come too soon; such a "professional" were better in an asylum than free, better dead than living. I have more sympathy for suffering clients than such idiotic practitioners.

A Few Considerations in Surgery for the Dentist.

By Garrett Newkirk, M. D., Chicago.

[THIRD AND CONCLUDING PAPER. CONTINUED FROM FEBRUARY REVIEW, PAGE 98.]

The rubber dam is perhaps the most valuable and indispensable adjunct to dental practice which we possess. Nevertheless, as we have seen, it may be a means of infection or irritation by reason of original uncleanliness or repeated use of a given piece; and it may be of harm in another way, viz: by mechanical constriction of the gums.

Every one has noticed the whiteness which ensues all along the gingivæ by the passage of a gold band onto the root of a tooth. This comes from pressure upon the arterial vessels, shutting off for the time being a portion of the blood supply to the parts.

Exactly the same thing is likely to take place through constriction by the rubber dam, particularly whenever it is forced high up by ligatures or clamps. The parts of the gum most likely to be injured seriously by this cause are those which lie within the interproximate spaces.

We are very likely to make the holes in the dam so near together that when we have placed it in position the strip of rubber between any two teeth is but a mere string, not wide enough, as it should be, to cover smoothly the interproximate gum tissue. Inevitably, therefore, the gum is caught in one hole or the other, and held tightly between the elastic string and the tooth. The circulation in the part is sadly impaired—and there is little doubt that it is sometimes entirely cut off, so that the tissue dies, and may never be restored.

With every precaution there is liable to be some interference with the local circulation about the teeth, and in prolonged operations this may be a serious matter. Every one has seen often after the removal of the dam that the gums have presented a swollen and discolored appearance. We have had patients complain of numbness and pain in them for days following. Probably in most cases healthy conditions are soon restored, but certainly it is our duty to prevent these congestions and their unpleasant consequences as far as possible. I am indebted to Dr. Black for the suggestion, that whenever the gums have been unduly pressed upon or constricted, especially during long continued operations on the teeth, much good may be done by rubbing them with the finger and a stimulating lotion like cologne, alcohol, tincture of myrrh or camphor, until the blood vessels appear to have resumed their normal functions.

SPECIAL PRECAUTIONS AGAINST THE MAKING OF WOUNDS WHILE OPERATING UPON THE TEETH.

First. Almost always the rubber dam should be applied before operations are begun. There are exceptions, where the difficulty of its application and the pressure of clamps upon the gum more than balance the benefits to be derived from its use, when it should be discarded.

Second. It is essential that the head of the patient be steadily supported. He will be less likely to move his head, voluntarily or involuntarily, if his position be made fairly easy and comfortable.

Third. The position and height of the chair should be adjusted to the easiest and freest movement on the part of the operator. The "arm rest" is a necessary adjunct to the chair, in order that one forearm and the hand may be firmly supported while steadying the head or lower jaw of the patient. With these precautions the possibilities of a "slip" are greatly reduced.

Fourth. For the engine, a poor hand piece, one which fails to grasp and hold the bit firmly, should not be tolerated.

Fifth. All cutting instruments should be sharp—they can be used more accurately, delicately and speedily.

Sixth. The operator, while he may work rapidly, should never be in haste ; but rather deliberate, making sure especially that each instrument he selects is adapted to the work in hand. Of all things he should avoid the habit of jerkiness or fussiness in the handling of tools.

TREATMENT OF WOUNDS, OR ANY INJURED TISSUE LIABLE TO INFECTION.

The skilled dentist is perhaps more liable to injuries in his own person than to produce them accidentally upon his patients. During his vacation season also, when camping, hunting, boating and fishing, his hands being soft are specially subject to scratches and abrasions. On these expeditions, therefore, he should always be prepared for emergencies by having as a part of his equipment, requiring little space, a pocket case of instruments and simple appliances. These should include a bottle of antiseptic gauze, adhesive and "court" plaster, and a vial of bichloride tablets. Moreover, the members of his family or friends who are with him may often need attention, and if there be no regular surgeon in the party, it will and should naturally devolve upon the dental surgeon to stand in his place.

The first thing for the surgeon to do when called on to treat a wound or injury, is to cleanse his own hands, with especial reference to the nails. The next is to thoroughly cleanse the injured tissue and its surrounding parts. All hairs upon or near them should be closely clipped or shaved, for they are liable to be a means both of irritation and infection. If only clean water is available this should be used freely. If a bichloride tablet is at hand this should be added, and besides water bathing, alcoholic is desirable. With care to avoid raw surfaces and sensitive tissue, light, quick sponging with chloroform is excellent for removing all dirt of an oily character.

Surgical cleanliness of the hands of the operator or nurse is of the greatest importance, and often neglected.* Whatever the situation, whether in the office, the home, on water, or in the woods, rules of cleanliness should be followed as perfectly as possible ; and the conditions will be exceptional indeed wherein practical safety of procedure may not be assured.

If the injury be one of quite severe contusion, say of the hands or feet, relief of pain and restoration of circulation may be greatly hastened by immersion of the member in hot water—the degree of heat and length of time to be determined by the sensations of the patient.

Probably the simplest and least to be dreaded injuries are cuts, made with sharp and presumably clean instruments, where there is a free flow of blood. These are seldom primarily infected by any septic poison—they need only clean treatment, adjustment of parts and *protection.*

With most people it is the least dangerous injury which is likely to alarm them most. The simple scratch or abrasion of surface which bleeds but little or not at all, is the one to which they pay but little attention ; whereas all such apparently trifling injuries should receive consideration, and if made by a possibly infected agent they should surely receive treatment and protection.

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*A friend of mine, a bacteriologist, examined scrapings from the finger nails of nine hospital nurses. Seven samples were found to contain the staphylococcus of pus formation—five of the seven all three varieties of that organism.

A punctured wound should be probed and medicated to the bottom if there is reason to believe that the instrument making it may have carried infective poison. In the office, where a probe pointed syringe is available, the immediate injection of peroxide of hydrogen is advisable, as it will almost certainly cause the throwing out of any particles of foreign matter; this to be followed by carbolized, or pure water, or weak cassia emulsion. Similar treatment, medicinally, is adapted to scratches, abrasions and contusions.

In the treatment of contused wounds, especially where tissues have been torn or scraped so as to displace portions of the integument or deeper tissues, it is often desirable to restore these as nearly as possible to their original positions. But in so doing the greatest care is essential that every surface replaced shall be bsolutely clean. If any foreign matter be included it cannot be less than an irritant, and it may be septic. Many cases of blood poisoning result from lack of thoroughness in this particular.

Adhesive strips which are to be moistened for application *should never be wet with saliva.* It will be a sure way to produce infection in a great many cases. Some years ago the students in a certain dental college complained of much trouble from the cuts, scratches and abrasions received in the infirmary. These very often refused to heal, and frequently suppurated. Inquiry by the superintendent brought to light that they all had the habit of moistening their court-plasters with saliva. When they were made to understand that only clean water should be used for this purpose the trouble ceased.

Another instance—a surgeon not long since was operating for the removal of a growth upon the neck, near the angle of the jaw. It seemed to him that he could do certain things better by passing the fingers of one hand into the mouth of the patient; then, forgetting himself, he would employ those fingers in and about the wound. As a result, he got frightful suppuration, which the dentist who stood near him during the operation had predicted.

Therefore, if the fingers of the surgeon are to be brought in contact with a wound they should be kept away from his own, or the patient's mouth, and the plaster to be used by moistening on any broken surface of the skin, however slight, should be wet with water, and the safe plan is to use a weak solution of bichloride. The plaster to be applied with heat is nowadays aseptic as it comes to us prepared for use, and needs only to be kept from contact with possibly infective substances. Not the fingers even should touch that portion which is to cover a broken surface.

The question may be asked in this connection: How about wounds in the mouth, where saliva is always present?

It may be answered that here, as before intimated, vascularity of the tissues is their chief protection. But have we not observed often that suppuration once set up in the mouth is hard to overcome. Many practitioners deem the treatment of pyorrhœa alveolaris almost helpless. Ulcers in the mouth frequently will not heal till cauterized. The eschar formed protects the surface from reinfection, giving it time to heal.

The socket of an extracted tooth which fails to be filled with a protection clot, or in which the clot is broken up, permitting infection of the torn tissues, is sometimes a troublesome thing to treat. After thorough disinfection, a protective stopping of the opening is necessary, and sometimes the best thing that can be done is to bur out the socket, freshening the surfaces to produce free hemorrhage and the formation of a clot.

Another important consideration is the avoidance of frequent redressings of the wounds. If a wound be properly dressed in the first instance and aseptically protected, as a rule it should need no redressing whatsoever till healing be complete.

What healthy nature needs is simply this:

1. The best adjustment possible of the parts involved.
2. Absolute cleanliness of the parts and the dressings used upon them.
3. Perfect protection from irritating or septic agents.
4. Last, but not least, *rest* of the part or organ injured, a sufficient length of time for the tissue cells to do their reconstructive work.

These rules apply equally to accidental injuries, and to wounds made by the surgeon's knife; to injuries and wounds of every sort of tissue. Conditions vary, but the principles involved in treatment are the same, whether of bone, ligament, muscle, nerve or brain; whether of the hand, the eye or the spine.

Moreover, the same principles, so far as applicable, hold good in the general practice of medicine, in the treatment of all forms of disease.

AFTER TREATMENT IN CASES OF KNOWN OR SUSPECTED INFECTION—LOCALIZED INFECTIONS.

In a majority of cases the infection of tissues may not be followed by that general condition which, for the lack of a better term, we denominate *blood poisoning*.

Nature usually succeeds in circumscribing the action of septic poisons. The phlegmon, or boil, may be cited as an example. The "crop" is ordinarily limited to a region of the body, probably to a lymphatic group. But the boil *may* produce the carbuncle, the deep and dangerous internal abscess, or general infection.

The form of infection most frequently met by the dentist is that of the dental pulp, which, if properly treated, seldom goes farther; otherwise we may have the alveolar abscess, but seldom more. Nevertheless, we may not be sure that infection of the dental pulp is always and only local in its consequences. Infection is never to be looked upon as a trifling matter. We can never say positively that the contingency of danger is absent. We are to proceed upon the theory that it is or *may be present*. Railroad officers have a rule like this for their employes: "When in doubt what to do *take the safe course*." A good rule also in surgery, medicine or morals.

Local treatment for all forms of infection, consists first, in giving free and external vent for unhealthy fluids. Second, in the destruction of organic germs, by which destruction the further formation of pus shall be prevented. We all understand this; it is our routine practice in the management of pulpless teeth. We cleanse the infected pulp chamber as thoroughly as we may, introduce germicides and seal them therein, with the intent to prevent all further septic action, either within the tooth or beyond it.

The surgeon of to-day follows the same course in the treatment of any infected wound, a suppurating gland, a carbuncle, boil, or other abscess pocket. He cleanses, disinfects, and protects as best he may from reinfection. The dentist possesses this advantage with reference to the pulp chamber of a tooth that the walls are solid and protection is easily made sure by use of the rubber dam and gutta-percha; but a serious disadvantage in case of "blind" abscess, that sufficient drainage may be difficult, if not impossible sometimes, through the apical canal.

Similar agents, as H_2O_2, bichloride, boracic acid, cassia emulsion, etc., are to be relied upon elsewhere as in the teeth.

For preventing infection or reinfection of a part there is no better dressing than a number of layers of antiseptic gauze, held in place by bandages or long strips of plaster. If there be inflammation and tension this, from time to time, may be wet with a weak solution of bichloride, say 1 to 5,000, which insures continuous asepsia, besides being cooling to the part, and grateful to the sensations of the patient. If the patient be not confined to his home, but going about, he should be provided with a bottle of the solution to carry with him, or given some of the tablets with instructions for using. But, if there be little or no tension or pain, and parts are perfectly protected, dryness of the dressings is considered preferable.

CONSTITUTIONAL OR GENERAL INFECTION.

Whenever there is probability that poisoning of the blood or lymphatic fluids has taken place, as indicated by a rise in temperature, pain extending some distance from the point of injury, glandular swellings, boils, carbuncles, or other abscesses, it is well to employ general, while not neglecting local treatment. The bowels, skin and kidneys should be stimulated to free action, and the blood should be saturated with some one of the well-known medicines believed to be antidotal in a measure to septic poison. Perhaps there is nothing better in this line of treatment than full doses of dilute sulphuric acid, alternated with sulphate of quinia. The chloride and iodide of potassium, hyposulphite and salicylate of sodium, also alcohol, have been used.

Frequent salt baths should be taken; the diet should be sparing, as a rule containing no meat, largely liquid, with acidulated drinks.

The secondary lesions produced by infection must be treated as they appear, and practically in the same manner as the original point of injury.

The subject of *shock* is one of the most important questions in surgery for the dentist, and may be considered in a future paper.

THE TREATMENT OF PERICEMENTITIS.*

BY C. N. JOHNSON, L. D. S., D. D. S.

Probably one of the most painful affections with which the dentist has to deal is that of acute pericementitis immediately preceding alveolar abscess. This is easily accounted for when we consider the anatomical relations of the tissues surrounding the root of a tooth. The pericementum is encased in a bony socket with unyielding walls on either side, and a slight degree of inflammation results in an undue amount of pressure. No matter from what cause pericementitis may be induced there sometimes comes a stage when no kind of treatment directed into the pulp chamber and through the canals is in the least effective. It is to the consideration of this phase of the affection that I wish briefly to call your attention.

In those cases where the canals have been opened up and a free vent made for the escape of gases, and this has failed to bring relief, it is an indication that the tissues of the peridental membrane have become so far implicated that the inflammatory process will go on independent of further irritation. This has always proved in my hands the most difficult stage of the affection to control, till within the past two or three years. During that time I have followed a practice which if faithfully carried out has seldom or never failed to give satisfactory results. The treatment consists in the application of moist heat to the gums surrounding the affected tooth.

The method of procedure is as follows: Water as hot as the tissues will tolerate is taken up in a large bulb syringe having a fine point. A jet of hot water is directed upon the gums and into the cavity of the tooth, all cotton or other dressings having previously been removed from the canals. The tooth and surrounding tissues are thus submerged in water as hot as the patient can tolerate. During the refilling of the syringe the water is to be retained in the mouth and then emptied into the spittoon just preious to another application. The water should be kept on a gas stove near at hand and the heat gradually raised as the tissues will admit. It will be found that in the end water extremely hot may be used if the heat be gradually increased, and one of the essentials to success in this treatment is to employ an exceedingly high degree of heat. If the tongue and other tissues of the mouth remote from the region of the tooth are too much affected by the water, a saliva ejector may be used to carry off the water after it has flown over the gum in the immediate vicinity of the inflammation. The gum in this region will often tolerate a much higher temperature than the normal tissues. In fact an application so hot as to be extremely painful to normal tissue often proves instantly soothing to the affected parts. The process should be kept up until perfect relief has been obtained, and the length of time necessary for this varies in different cases. In some instances where the pain is most distressing prior to the application the sense of relief will appear so suddenly as to prove astonishing, while in others it will require persistent treatment for perhaps thirty or even forty minutes before a substantial effect is produced. I have never yet encountered a case where persistent effort failed to finally bring a cessation of pain. As to the permanency of the relief, this is governed largely by conditions and circumstances.

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*Read before the Odontological Society of Chicago, February 20, 1894.

If the general tone of the system is bad; if there is universal congestion strongly marked by the symptoms of what is commonly called "a heavy cold;" if the circulatory and absorbent systems are badly out of condition; or if the excretory organs fail to perform their function, then the relief is necessarily temporary, and we must resort to constitutional treatment in order to gain permanent results.

A patient in this condition should be given a rapidly acting cathartic, the citrate of magnesia in large doses having proved in my experience the most pleasant and satisfactory. Again, if the inflammation has gone on to a point where suppuration has begun in the apical space, we cannot hope for complete relief till the abscess has pointed and discharged, but even in these cases we may be reasonably sure of preventing extensive infiltration and puffing of the superficial tissues, and also of mitigating the suffering.

As to the circumstances which may render the relief temporary, I have noted that if the patient left the office immediately after the hot water application, and went into the open air on a cold day without carefully protecting the whole side of the face from the air, the pain would ordinarily recur. In other words, exposure would bring back the trouble. But not the least among the gratifying results that have followed this line of practice in my hands is the large per cent of cases where a permanent relief has been gained.

A criticism might be made by some as to advisability of leaving the cavity and canals open during the treatment. The argument might be used that there was danger of additional infection through the medium of the open canals, but I have never seen a case where I could trace any evil effects to this cause. My reasons for leaving the canals open are, that I wish the hot water to reach the apical space if possible, and that there may be a likelihood of the water, in flooding the cavity and canals, floating to the surface or dislodging small particles of debris that may have been packed in the canals near the apical foramen, and which the broach has failed to bring away. I never leave the cavity open when I dismiss the patient. If the tooth is not too sensitive to pressure I usually dry the canals as thoroughly as possible after the pain is relieved, and then flood them with an antiseptic. A small pledget of cotton saturated with the antiseptic is then place loosely in the chamber, and the cavity sealed with Gilbert's temporary stopping.

The canals themselves are never packed with cotton at this sitting, and if the tooth is much raised in its socket, and extremely sensitive to pressure, I do not even attempt to seal with gutta-percha. A tooth in this condition should be worked upon with instruments as little as possible. The mechanical irritation invariably results in increased sensitiveness.

Where the tooth is loosened and sore from swelling of the pericementum, I simply dry the canals, flood them with an antiseptic, and place some cotton in the cavity merely to keep food and debris from packing into the tooth. I should much prefer dismissing the patient in this condition and taking chances of infection through the imperfectly sealed cavity to attempting a thorough sealing at this sitting. These are mostly emergency sittings, and our principal office is to relieve the present distress. Usually in twenty-four hours the tooth will be in a condition to work upon, and it may then be treated and sealed.

The simplicity of the hot water treatment would seem to argue that the case could as well be treated by the patient in his own home as by the dentist in his office, but my experience has taught me that the results are seldom satisfactory. Somehow patients do not succeed, no matter how careful the instructions. They do not use the water hot enough, or they do not apply it properly, or do not keep up the application a sufficient length of time.

In fact, the element of time in this treatment proves one of the greatest obstacles to its practical application. As has been stated these are emergency cases, and are likely to call for attention at any hour through the day without previous appointment. In a full practice where almost every moment of every hour is systematically assigned in advance for the regular routine work of the office, it is exceedingly trying to the operator to be called away from his work to devote any considerable time to an unexpected patient. In those cases where I have fallen short of producing the most satisfactory results it has been traceable to this dilemma. And yet a dentist's first duty as a practitioner and as an individual is to relieve suffering no matter when or how it appears.

In searching for a theory to account for the results obtained by the application of hot water I was led to consult Dr. W. T. Belfield in the matter. I then learned for the first time that he had long been a strong advocate of hot applications for the relief of pain in other tissues. His theory was that heat, especially moist heat, was an anæsthetic. This would account for the relief of pain temporarily, but if this were the only action of hot water the pain would recur in a short period. To account for the permanent results which I claimed to have undoubtedly secured in many cases, he said that hot water applied in the manner I had indicated would prove a very rapid and effectual absorbent. It is to this latter quality that I attribute the lasting results, and this argues especially for a somewhat protracted application.

Dr. Belfield also stated that in the use of hot water, a very minute stream should be used to play upon the tissues. A jet such as would come from a hypodermic needle he had found more effective than a larger stream.

In conclusion I may add that in some cases where the pain has been excruciating, I have added to the hot water a few drops of carbolic acid, making about a five per cent solution. The anæsthetic effect of carbolic acid is thus added to that of the hot water, and the relief is usually exceedingly prompt and very gratifying to the patient.

DISCUSSION.

Dr. T. W. Brophy: Heat and moisture employed as a therapeutical agent for the treatment of acute inflammation was long ago recognized and highly regarded.

The merits of hot water, when properly applied to a part soon after stasis has occurred, cannot be too highly extolled. I have never employed it in the manner described this evening, by Dr. Johnson, but the advantage to be derived by applications such as he suggests commend themselves to us, because the object desired in applying heat and moisture is more speedily accomplished than by the usual methods.

Hot water applied to a part in the first stage of inflammation has the effect of dilating the vessels surrounding the inflamed territory, thereby attracting the blood from the engorged vessels at the seat of inflammation, and thus promoting the flow of blood and reëstablishing the normal circulation—in short, terminating the inflammation by resolution.

Pericementitis, in my opinion, does not occur as frequently now as it did prior to the days of antiseptic treatment. It is seldom indeed that a case develops in the process of dental treatment, if the operator observes essential antiseptic precautions.

Dr. J. G. Reid: I have treated acute pericementitis for a number of years by recommending the patient to a "sitz-bath;" with the best of results usually following the treatment.

The patient is placed in a suitable receptacle, and the water added slowly, the temperature of the water being increased gradually until the hips are covered. At this juncture the water should be as hot as can be borne. The patient should remain in the water fifteen to thirty minutes.

The increase and decrease of inflammatory conditions are modified and regulated by the application of heat and cold, which operate on the capillaries of an inflamed territory in the same manner as heat and cold will expand and contract gases.

Dr. E. A. Royce: Mr. President and gentlemen—I wish to thank the essayist for giving us this method of applying hot water in the mouth. Some eighteen years ago I was told to use this prescription and for an hour or more I sat with a cup of hot water in my hand and my mouth full. It certainly gave me relief, but it was a tiresome operation and I do not wonder that our patients will not persevere in its use until they gain the full benefit of the application.

A little experience in my family may serve to show the efficacy of this simple remedy in cases of inflammation. Some time ago a lady turned her foot while upon the dancing floor. Severe pain followed and she was removed to her home and the foot placed in hot water. For three hours the temperature of the water was kept as high as could be endured, and at the end of this time the patient had little or no pain and slept well. In the morning the small bones of the foot that had been misplaced were put in their proper position with but little pain and no swelling. It was a simple remedy yet it saved the patient days of suffering.

My attempts to use hot water in my practice have not been satisfactory because of the primitive method of application, but with the methods given by Dr. Johnson I feel sure we have a wonderful remedy in our hands.

Dr. A. W. Harlan: For acute pericementitis I have used a hot pack on the neck and side of the face with three or four thicknesses of heavy toweling wrung out of hot water. At the same time I give calcium sulphide, one-tenth grain every ten minutes for the first hour, every fifteen for the second hour, and one every half hour for two or three hours longer. To arrest pain at night use

℞ Acetanilid	gr. viii.
Syr. simple	ʒij.
Spir. Frumenti	℥ij.

M. Sig. Take one-half the above at five or six P. M., and the remainder at 10 P. M.

Dr. W. B. Ames: Since listening to the paper it has occurred to me that in place of hot water we might advantageously employ steam in cases of pericementitis. I have been using a steam atomizer recently for other purposes and it would seem to me to be an excellent apparatus if it could be modified in form so as to perfectly reach the parts affected. A jet of steam could then be thrown over the gum and any degree of moist heat be obtained. I hope to test this apparatus in practice at the first opportunity.

TRANSLATIONS.

Local Anæsthesia in Dental Surgery.

By M. Maurice Roy in Revue Internationale D'Odontologie.

[Continued from January Review, page 25.]

Until late years local anæsthesia did not make much progress, as was seen in the previous article. Richardson's atomization of ether remained the means most universally employed for local anæsthesia, and even this was little used.

But in the last few years the progress of chemistry, and physiological researches carried forward toward this end have resulted in the discovery of numerous agents for local anæsthesia. A new path has been opened and it is now not only among refrigerants that the solution of the problem is sought. By means of various local applications, and above all by the use of hypodermic injections, results have been obtained which might be considered ideal did not the constant progress of science and experiment hold out hopes of new agents still superior to those we possess.

One of the most conclusive proofs of the progress realized in the practice of local anæsthesia consists in its present importance in the field of surgery; an importance which increases every day in proportion as anæsthetic agents become better known and better handled, and in proportion as the objections are removed which for some time were felt toward them owing to the accidents which resulted from ignorance or lack of skill in their application.

Dental surgery, which for several years employed local anæsthesia perhaps even less than general surgery, now makes use of it very generally; and as was said at the beginning of this work dentists have certainly contributed to spread its usage throughout the whole field of surgery.

Of all anæsthetic agents, cocaine is evidently the one which takes the highest place. Nevertheless, side by side with it stand other analagous products, which by their various actions demand our attention. These are tropacocaine, chloride of ethyl, and coryl, and we need to give particular study to each one because of the importance which it has acquired. However, before beginning this study we will briefly point out a few of the products enjoying anæsthetic properties which have been offered during the last few years. These agents are of various sorts. Some are employed as outward applications and others by means of injections under the skin or mucous membrane.

As to refrigerants, we need not mention them further save the chloride of ethyl and coryl. We have noted nearly all the others in the previous number.

Among outward applications must be cited a large number of preparations sold in dental depots and extolled as anæsthetics; but all these preparations are merely worthless mixtures of various anæsthetic substances.

Tincture of cannabis was praised a few years ago as a local anæsthetic, but its action is very superficial, like that of all similar applications whatever they may be.

Dubrae, in 1885, offered a mixture which he thought gave satisfactory results in the extraction of teeth. It was a solution of chloral in chloroform, to which was added some essential oil of menthol and extract of capsicum.

At last cocaine was employed in his applications for the treatment of ophthalmia where anæsthesia of the eye is obtained by simply dropping the cocaine within; but if such anæsthesia is deep enough on certain mucous membranes, it is very superficial upon others, and absolutely useless upon skin not deprived of its epidermis. Anasthesia obtained in this way upon the mucous membrane of the mouth is sufficient for light operations, such as cutting the gums, but the result is absolutely useless from the point of view of the extraction of teeth. This was proved in the first efforts made by dentists with cocaine, and it was acquaintance with these facts which caused them to relegate it to a secondary rank until the practice of subcutaneous injections changed their opinion, and gave this agent the importance which it now holds.

We cite only as a memory the effort to obtain anæsthesia by applications of cocaine followed by atomizations of ether. That mode has now only a historic interest.

Since the discovery of the properties of cocaine, a large number of alkaloids possessing analagous anæsthetic properties have been tried, but no one of them has yet been able to supplant cocaine.

Cafféine, (Terrier), théine, menthol, (Rosenberg) have been tried in turn but their action is much less powerful than that of cocaine.

Isococaine produces anæsthesia more rapidly than cocaine, but is more irritating than the latter. Erythrophleine gives a more lasting anæsthesia, but it takes longer to produce it and the effect is, after all, less powerful. Moreover, it is very irritating even in a small quantity. (Kaposi, Panas.)

We will also note *brucine*, (Burnett, Leiss), which can only be used externally, its poisonous nature of course preventing its employment by hypodermic injections.

It is known that local anæsthesia can be obtained in certain cases by the use of a simple injection of pure water. One can have recourse to this process when, from one reason or another, it is necessary to abstain from an injection of cocaine. This practice is absolutely harmless, and aside from the mental effect, it does sometimes give satisfactory results.

One may also employ a solution of sea salt, but this process is is painful, and it is necessary to add a little cocaine.

Chloride of ethyl or chlorhydric ether is a colorless liquid, having a slight odor of garlic. It is not soluble in water but is entirely so in alcohol. It is inflammable and burns with a green flame. It boils at 12°. It is prepared by distillation in alcohol saturated with chlorhydric acid. As it boils at a degree of temperature lower than normal it has to be kept in tubes having tapering ends tightly closed.

Lately small copper spouts with screw caps have been added to the tubes, making them easier to handle.

Chloride of ethyl has been long known. Flourens and several authors endeavored to use it as a general anæsthetic but with unsatisfactory results.

Rottenstein, in 1866, conceived the idea of associating ether with it to produce refrigeration and he said that he thus obtained good results; but these facts were entirely forgotten when, in 1890, Dr. Rongier, of Lyons, praised the good effects of chloride of ethyl in relieving the pain of shingles. At the same time the dentists of Geneva tried to obtain local anæsthesia for the extraction of teeth with chloride of ethyl, and in the French Surgical Congress of 1891 M. Redard contributed a paper on this subject. The same year M. Meng experimented with this agent at the clinic of the Paris School of Dentistry.

The usage of chloride of ethyl became more and more widespread until a time when dentists became frightened by the many accidents occurring through the use of cocaine, concerning which there was great excitement. Still, as experience has proved, they found themselves in possession of an agent which, if it cannot be applied in all cases, is nevertheless capable of rendering great service on many occasions.

As we said just now chloride of ethyl is confined in glass phials having tightly closed tapering tops. When it is desired to use one of these bottles one breaks off the extreme end of the point and clasps the bottle in the hand. The warmth of the palm of the hand is sufficient to set the chloride of ethyl to boiling, for it boils at 12°, and it issues in a vapor through the tiny orifice at the top of the bottle. When one has finished it is necessary to stop up the tube else it will in a short time be empty. For this purpose rubber can be used, but it is not altogether adequate. A better way is to seal up the tube in a fashion similar to the original one, following a process suggested by M. Gillard and M. Fossez. This consists in heating the tapering extremity of the phial to the melting point, then pinching it with the forceps. It is necessary, however, to take care to wrap the bottle in a cloth dipped in cold water while the end is being heated, and to hold it vertically in order that the sealed end may become cool before the chloride of ethyl flows into it again.

To avoid all these complications it is preferable to use bottles furnished with the little spout of copper, having a screw cover which permits one to use the chloride of ethyl without the loss of any of it and with no annoyance.

The phial being held in the manner indicated above, the spray must be directed upon the region to be anæsthetized. The skin or membrane reddens slightly at first, then little white spots appear which spread rapidly and run together, and the region covered with rime is then anæsthetized. The atomization may be long continued without fear of producing a scar. None has ever resulted.

For the extraction of teeth the region to be anæsthetized should be kept as free from moisture as possible, else it takes very long to produce the freezing or perhaps one fails altogether.

The atomization is made upon the gum directly over the root of the tooth to be extracted, commencing on the outside and continuing as far as possible around the tooth; however, if this is very difficult of access, one must be content to spray the cheek in a manner to act upon the branches of the nerves.

We have performed extraction of teeth by this latter process without causing pain and there is certainly an effect from it beyond the mental one.

The cold produced by chloride of ethel is more intense than that produced by ether, which is explained by the fact that it boils at a lower temperature than the latter, and its employment is infinitely more convenient since it does not necessitate the use of an apparatus liable to get out of order like Richardson's atomizer. Nevertheless, the anæsthesia produced is rather superficial and it is always important to operate very quickly if one expects to get satisfactory results, so its use is necessarily limited. One cannot use chloride of ethyl with any hope of success in the extraction of a firmly rooted tooth; but if the tooth does not offer great resistance and is in a position easy of access, one can have recourse to this agent with advantage and obtain sufficient anæsthesia to operate painlessly or at least with a great amelioration of pain. If the matter in hand is an operation on the gums, such as opening an abscess, etc., this agent is the right one for an anæsthetic. One gets almost always a better result in operations upon the upper jaw than upon the lower, because in the latter case the difficulty is so great of preventing the presence of saliva.

Coryl is a product recently discovered. It was in fact in 1892, in the Medical Congress at Brussels that it was presented for the first time by M. M. Joubert & Co. Experiments with it had been made both in general and dental surgery in Belgium, and M. d'Argent having known of the good results obtained, tried this new agent and made it the subject of a paper read at the Odontological Society, of Paris.

Coryl is a mixture of chloride of ethyl, and chloride of methyl having its boiling point at 0°. It is a colorless liquid, with the slight odor of garlic, which is the property of its two component parts. It is inflammable, and burns with a green flame.

Coryl is contained in a special receptacle called a *coryleur.* This apparatus made of nickel is in the form of a tube with a tapering end, and upon it are placed several spouts so shaped as to permit of reaching all points in the mouth. The issuing of the coryl is regulated by a screw placed in the side of the apparatus.

In order to use coryl clasp the reservoir or *coryleur* in the hand and tip it up and down. It is necessary in order to obtain good results that the coryl should be kept at a temperature of from 15° to 20°.

Telling the patient to breathe through the nose (the vapor of coryl is very irritating), and having dried the gum, you begin to atomize it directly over the root of the tooth to be extracted, moving the spray up and down, and around to the inner surface of the gum. Direct the spray thus for from fifteen to twenty seconds, and at the end of this time anæsthesia will be obtained. It will last for from twenty to forty seconds following the time during which the atomization is applied.

The anæsthesia produced is quite deep. If the tooth is not too solidly implanted, and if the operation is rapidly performed, the result will be very satisfactory. No scar has ever followed the application of coryl. One should take care however, not to allow the atomization to be too prolonged upon one point.

The *coryleur* greatly facilitates the application of this refrigerant. By its form, and by the possibility of atomizing very close to the gum instead of from a distance, it permits one to reach the region to be anæsthetized more effectively than is possible with the phials of chloride of ethyl. Moreover, it produces a more intense cold and deeper anæsthesia than the latter.

Coryl seems to be up to the present time the best agent for anæsthesia by refrigeration. Nevertheless it is not exempt from the faults inherent in refrigeration itself, slight pain of application and sensitiveness of the neighboring teeth.

It is also difficult of application to the lower jaw because of the difficulty of hindering the approach of saliva which retards or prevents anæsthesia the same in the case of this agent as with chloride of ethyl. A somewhat serious annoyance is the necessity of recharging the apparatus after every ten operations which besides renders it more expensive to use than the chloride of ethyl. However these inconveniences are compensated for by its real advantages.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

Regular meeting, February 6, 1894, Dr. J. H. Woolley, First Vice President, in the chair.

Dr. Edmund Noyes read a paper entitled "Relative to Immediate Root Filling."

DISCUSSION.

Dr. G. V. Black was called upon to open the discussion. He said: Mr. President, I did not expect to be called upon to open the discussion on Dr. Noyes' paper. However, I can say a few words. It would seem that this subject has been sufficiently discussed, and yet I must agree with the position of the essayist that so long as we see about us practices which we believe to be wrong in principle and unjust to our patients, we should continue the discussion. I have no considerable disagreement with the essayist, and therefore most of what I shall say will be to emphasize things that he has said in his paper. It seems to me good, reasonable, and logical doctrine that we should refuse to fill roots immediately in all cases of septic condition. We should only choose those roots for immediate root filling in which we are satisfied the condition is aseptic, and has been none other than aseptic. It seems to me no other line can be drawn that will be just to ourselves or to our patients. Now, gentlemen, I am perfectly aware that we may fill roots that are in a septic condition at the first sitting successfully, and I admit that the majority of them may be filled successfully, but I am not willing to admit that ten per cent of failures is just to our patients. I am not willing to admit that five per cent of failures is just to our patients. I am not willing to admit even that that per cent of alveolar abscess is just to our patients. Our patients to-day have a right to better results. It is terrible to go through with a case of alveolar abscess after the root has been filled, or a case of alveolar abscess that might have been avoided. These eruptions must come after indiscriminate immediate root filling.

There are two or three things about which I am very radical regarding the treatment that has been alluded to, and I may as well spit out my radicalism here, and you can chew me up if you choose. When I take hold of one of these cases, I never allow anything to go into the root canal except what I put there myself; in other words, it never goes out of my hands uncorked—never. If there is pain the patient returns, and I change the dressing, empty the canal three or four times a day, if necessary, and do it in the night; but I do not propose to reinfect it. Such a course is troublesome, and I do not doubt that cases occur where it would be very troublesome, but they will not be many. I remember one case which occurred recently in my practice in which I had to change the dressing pretty often for a couple of days. The patient got well very soon afterward, but probably would not have been well for weeks if I had left it open. I want them tightly corked, perfectly sealed. I know there is great difference of opinion among the dental profession on that particular point, and I speak my sentiments squarely out, and I tell you that in the long run it is the easiest way for both the patient and the operator. I had a case a little while ago that some of you in Chicago had treated. There was a sore apical space for three months, leaving it open—could not stop it up because it would hurt. It quit hurting the patient in two days after I took hold of the case, and kept well. I let it go a week and then filled the root. I think it is important that this be recognized. We should also recognize the fact that we run great risks of doing harm to our patients when we fill root canals that are in a septic condition, for there is a minority of cases that will require more than a single treatment. A minority of cases I say, but it is that minority that we should do justice to.

Dr. CLIFFORD: I would like to ask Dr. Black if he does anything for the relief of pain except changing the treatment in the tooth?

Dr. BLACK: I have no treatment that is new to the dental profession in that regard. Of course, I use anodynes in the pulp chamber with a view to relieving pain.

Dr. CLIFFORD: The treatment is entirely local?

Dr. BLACK: Yes.

Dr. FERNANDEZ: I would like to ask Dr. Black what medicaments he uses for that purpose?

Dr. BLACK: In the case I referred to I used with oil of cassia, oil of cloves, the principal part so mixed being oil of cloves.

Dr. BENTLEY: I would ask Prof. Black whether there is any possibility of implanting germs in a tooth that has been rendered aseptic by his treatment, by the wrapping of shreds of cotton around a broach such as we use in these cases?

Dr. BLACK: Certainly, I do. It is a means of implanting a new brood of microbes, and it is a very common thing for me to wet my fingers with a good antiseptic when I am wrapping my broaches.

Dr. A. W. HARLAN: I am unfortunate in not having heard the paper read, but I understand it was relative to the treatment of teeth rendered pulpless, and particularly to immediate root filling. The question of immediate root filling is one that is interesting to the dentist because so much disaster has followed the indiscriminate practice of it. One of the first patients I saw to-day was a gentleman who had a bridge with five teeth on it, and there was an alveolar abscess from the distal buccal root of the first molar, and I told the gentleman it would be impossible to cure that abscess without taking off the bridge. He said he had been assured by a dentist that by injecting something into the fistula from the outside it would get well. Another thing that attracted my attention in that gentleman's mouth was this: The third molar below had a gold crown, and there was an open fistula, and the first molar on the other side of the mouth below had another open fistula. So here was a man, forty-three years of age, with three abscesses discharging into his mouth daily from three teeth that had been crowned. That case alone ought to be something of a warning to dentists to properly fill the roots of teeth. Whether these teeth were filled by the immediate process, or slow process, I do not know, but I think there is no one in this room who will question the wisdom and suggestion that I had made, that these abscesses would never heal spontaneously; that all of the crowns and bridges would have to be taken off and the roots filled.

In the discussion by Dr. Black, he made a statement which is worth repeating and emphasizing a good many times. I do not know that he is the original author of the statement. He may have been. It is this: From the time you begin the handling of a pulpless tooth until the root is filled, do not allow anything to get into that tooth unless you place it there yourself. If I should bore into a pulpless tooth, whether there was a filling in it or not, I would not let saliva or anything else get into it at the time or subsequently at any period unless I placed it there myself. There are many ways of handling a tooth without allowing saliva or water to get into it. I know it is a common custom and practice for a great many gentlemen to say that they inject hot water into the tooth. Hot water is not a sterilizer. It is not even a sterilizer when it has been boiled, because boiling water does not destroy the genus micrococcus as a rule, because there are a good many of that family that require a greater degree of heat. Of course, it is easy enough to make a dogmatic statement, that nothing should be allowed to enter a tooth that you do not place there yourself, but that statement will bear the strictest scientific scrutiny, and the point Dr. Black spoke of about pain being set up from the stopping of the root of a tooth even loosely, that has been too long treated or overtreated, is one that I have long since recognized, and I have had occasion a good many times to practice the kind of immediate root filling in those teeth that would not be tolerated in any other, in carefully selected cases. When we talk about immediate root filling, Mr. Chairman, it is such a large subject that a great many who believe in that method always say, "well, if you remove the pulp, and there is no blood, you fill the root immediately, don't you?" Well, if you say yes, that is one argument in favor of immediate root filling, but it is not. The statement made by Dr. Black, which is undoubtedly correct, was in respect to filling the root of a tooth immediately where you find it in a septic condition. That is the point on which this question hinges. Who is going to tell with his nose or his eyes whether the root of a tooth is in a septic condition or not? You cannot always tell by the smell. You cannot always tell by the character of the discharge, or the absence of it, and so when it is doubtful you will have to place it in the order of being septic and treat it as such. Immediate dissipation of a septic condition is not always possible by immediate root filling—I mean within ten, fifteen, or twenty minutes, or a reasonable length of time. One of the points I have made in papers I have read before dental societies was this: It was not alone the septic matter in the canal of the tooth, but it was the permeation, the infiltration, the imbibition of septic matters and gases in the root, or the dentine of the root, that rendered it not probable that a case of that kind was in a fit condition for filling, even though powerful antiseptics had been introduced. There are any number of gentlemen here who must have filled the roots of teeth, and two or three years thereafter had trouble in the form of lameness or soreness about the tooth, a projection from the socket even after the root of the tooth was well filled. This is brought about, not always by an extra canal or opening along the side of the root, for there is sometimes a kind of poisoned condition of the dentine, and the poisonous matter has so weakened the cementum and pericementum that there is permanent lameness due to this. These poisonous matters will travel through the dentine of teeth and infect the pericementum, so that the teeth will be uncomfortable. Therefore, I say in all cases where sepsis is suspected, or believed to be present, it is better to use more than one local treatment to get rid of it than to run the risk of filling it, and possibly having a lame condition of the tooth, or most probably an acute abscess.

Dr. E. L. Clifford: It is evident that we do not all agree upon the subject of immediate root filling, and I believe, with the essayist and Dr. Black, that just so long as *incorrect* practices are in vogue just so long should this question be discussed. I am one of the advocates of the preparation and filling of root canals at one sitting, *when the experience, judgment and skill of the operator is sufficient to enable him to properly select his cases.* Five minutes (the time allowed in this discussion) however, is scarcely sufficient time to present either side of such a question ; it will therefore be impossible for me to enter into detail and I fear my views will be misunderstood. I always say to those with whom I come in contact, especially the young men, that I approach the subject with fear and trembling. The indiscriminate filling of root canals at one sitting is, of course, a dangerous practice, and especially so with those whose fingers, eyes and noses, I might say, are inexperienced. I believe that roots, where the anatomical condition is in a normal state, where no acute inflammation exists and where the moisture can be wholly and totally abstracted, whether with or without fistulous openings, can be put in a condition to safely receive a filling at one sitting better than at twenty. A tooth where the apical foramen is largely opened and where necrotic tissue exists in the apical space, of course would be placed on the doubtful list. However, in the treatment of these conditions the root canal is not a necessity and I prefer treating the same through other channels. As to the injustice to our patients in the risks taken, I believe it will compare favorably with the injustice done them in demanding so much of their time and money when repeated visits are required. In my practice, also, I place importance on constitutional treatment; I believe that *even nature* can be assisted, and I believe that she demands our efforts in that direction at times. Just so long as we regard the dental organs as masses of inorganic matter placed within inorganic receptacles (as some seem to do,) and place no confidence in nature's power and disposition to return to the state of health, just so long will we be mechanics and tradesmen in the true sense of the terms, and fail to recognize her efforts at regeneration and the accompanying symptoms necessary to the building up of new tissue, or the eradication of a pathologic lesion.

DR. G. NEWKIRK: I desire to place myself on record as opposed to the doctrines which we have just heard enunciated by Dr. Clifford. About ten days ago a lady came to see me, who had been suffering for some months with facial neuralgia. There were two large amalgam fillings, one in the first left upper molar, the other in the second bicuspid adjoining. The teeth were both tender upon pressure and tapping, and the fillings seemed to be imperfect. On removing these fillings the canals of both teeth were foul, stinking. Now, what kind of practice would it have been for a man of good sense, as I hope I am, to fill those teeth immediately? I cannot conceive of any greater folly in practice than that would have been. I did not even attempt to clean out the canals of the roots. I simply opened the main chamber and injected a mixture similar to what Dr. Black mentioned, namely, wintergreen, 4 parts, oil of cassia, 1 part, and carbolic acid 1. Sometimes I use the oil of cloves. I treated the patient at that time and once since, and to-day at the third sitting I filled those roots and crowns, feeling certain that they are in an aseptic condition. The external cavity had been stopped a week without the slightest uneasiness resulting, and I felt perfectly safe in filling the teeth. I cannot see the sense of taking unnecessary risks. What is the object in compromising the safety of our patients, our own reputation, our own consciences by taking risks of that sort? I am not in favor of immediate root filling, with rare exceptions, where the patient might be going away and could not get treatment. I am not in favor of immediate root filling in cases where I remove the pulp myself, even in the most favorable cases for that kind of practice.

Dr. Noyes: I need not detain the society more than a minute or two in closing the discussion. I am glad that the importance of keeping pulp chambers and canals closed against the fluids of the mouth has been so strongly insisted upon, but there are a few cases that will not bear it at first, and I have supposed that a strong and slowly soluble antiseptic, like oil of cassia or cinnamon, if used in considerable quantity, can be depended upon to prevent reinfection for several days, even though the covering over it be punctured, or otherwise arranged to allow some escape of fluids if there should be enough accumulation of pus, or serum, or gas to make pressure enough to require it. (Formation of gas, after pulp canals have been moderately well cleaned and have an antiseptic placed in them, is mostly imaginary in my opinion. Most cases should be tightly closed at once, and kept so.)

Dr. Geo. J. Dennis read a paper entitled "Marginal lines of fillings."

Dr. G. V. Black: I do not like to be called upon a second time to open the discussion. I approve of the paper very heartily, and I am glad to see this matter of the marginal lines of fillings coming more to the front. I regard it as very important that the marginal lines be closely studied and the forms of contour with reference to cleanliness be very carefully considered. It is a matter that has not been at all sufficiently considered as yet, and not sufficiently studied.

The matter spoken of by the essayist in regard to the form with reference to the reflection of light and the æsthetic appearance, is an important point, one that has scarcely had any study by the profession. His assertion that fillings may be contoured considerably beyond the normal contour of the teeth for the purpose of cleanliness, can be accomplished, and yet provok e no unpleasan sensation to the eye, if the finish be in proper form so as to give the proper reflection of light.

Dr. AMES: Did I understand you to tell us that a filling slightly contoured would be as good or more desirable in appearance than one finished to the contour of a tooth, in the matter of reflection of light?

Dr. BLACK: I did not say that a filling will give a better appearance to be contoured, but often it is desirable that it be contoured more than the contour of the tooth in order to get a good cleansing surface, that is, so formed that the reflection of light is not offensive to the eye. Very often we can make a better appearance to a filling, particularly the small ones, by making the contour a little more than the normal contour of the tooth. The surfaces of small fillings often come together at such an angle as to give a very uncomfortable reflection of light. It does not look well.

Dr. C. N. JOHNSON: Mr. President, I have only a few words to say in regard to the subject under discussion. I endorse the paper and the points contained therein, and I also endorse what Dr. Black has said. I want to say, however, that in these cases, as in all other directions, we are likely to run to an extreme.

A paper was published some years ago, which advocated what I consider an injudicious amount of extension in the preparation of proximate cavities in the anterior teeth. The argument was used that no matter how small a decay there was on these surfaces, the cavity should be extended so as to involve the lingual and labial walls. The statement was made, that in every instance the cavity should be cut so far as to bring the line between filling and tooth to a point where it could be kept clean by friction of the tongue or lip. This seems to me an extreme measure and not always justifiable. We must use judgment in these cases, but on general principles I am in favor of extending the cavity so that the marginal lines will be removed as far as may be from the point of greatest liability to decay.

Dr. NOYES: It does not seem to me necessary to extend small cavities in the proximate surfaces of front teeth to so great an extent in sound tissue, as has been recommended, especially not to extend them so much as to be very plainly visible at the labial angle. Such fillings, if properly made and well taken care of by the patient, are less likely to fail than any others except those in occluding surfaces, and if the teeth are fairly good and the cavities small, it is not necessary to cut away the entire proximate surfaces of the teeth and cover them with gold. Such cavities should be extended considerably gingivo-lingually, not quite so much gingivo-labially, and somewhat toward the incisal angle, so that the point of contact, and some distance from it in every direction may be covered with gold. If there is to be much exaggeration of the natural contour it will become necessary to extend the cavity pretty nearly to the lingual and labial borders of the proximate surface.

Dr. LOUIS OTTOFY: I would like to have had the essayist enter more deeply into comparisons which would bring out the results of the respective work of Drs. Black and Ottolengui. Dr. Ottolengui's work, entitled "Methods of Filling Teeth," as I understand it, is simply a description of his own individual practice and contains nothing which the author has not himself tried and practiced, and it is claimed that he has culled little from elsewhere; in other words, his work is strictly original. My understanding from Dr. Black's ideas and his lectures on this subject is, that he has collected ideas from different sources and combined them with his own, and presents this work to the profession.

It would have been more interesting, to me at least, had the essayist entered more deeply into that part of the subject. Dentists take advantage of the unpleasantries of their profession in order to gain business. In the last eight or ten years, I separate more teeth, in proportion, than formerly, by the usual means employed for that purpose, so that fillings may be contoured and the teeth will not be changed into abnormal shapes. Many patients say that they do not like to have a wedge put between their teeth; they prefer to patronize a dentist who will fill them without separating. I saw a marked case of the kind recently, as illustrated by the essayist. The dentist succeeded well in making a distinct black line between a number of the front teeth; claiming to fill without wedge or separation; he separated them with a file, and when the fillings came in contact they appeared perfectly black. The operations to be performed as the essayist recommends, cannot be done without separating properly, and where space is lacking it should always be done.

Dr. Dennis, closing the discussion: I have no further thoughts to add to what I have given in my paper, except to say that I have given credit in the paper to Dr. Noyes for the idea I received in connection with the lights and shadows upon fillings. Some four years ago he mentioned the fact that with large contour fillings a real diminution in size of the filling could be made without affecting its apparent size. By experimenting, I found that the same principle applied inversely to the small fillings that we place between the anterior teeth; that is, fillings can be actually projected from the cavities without any apparent projection.

Alumni Meeting.

Reported by Don M. Gallie, D. D. S.

A very pleasant and successful meeting of the alumni association of the Chicago College of Dental Surgery, was held February 14, in the new college building, corner of Wood and Harrison Streets. During the afternoon a number of interesting clinics were given by the following gentlemen: Dr. A. W. McCandless, Bicuspid crown, porcelain facing; Dr. Norman J. Roberts, Making and adjusting obturators and gold crowns; Dr. F. K. Ream, Porcelain crowns and inlays; Dr. Honsinger, Filling with sponge gold; Dr. Keefe, Cervical margin gold filling; Dr. Carroll, Cast aluminum plates, and Dr. E. M. S. Fernandez, Specialties in crown and bridge work. After the clinics the members of the association, numbering seventy-five, and the graduating class gathered in the lecture room of the college for the purpose of listening to some proposed changes in the constitution and by-laws of the association. An excellent discussion followed the reading of the proposed changes, and the enthusiasm and interest manifested by the large number present augurs well for the future of the alumni association. After the meeting the company repaired to the dining room of the college, where a collation was served, after which a number of excellent speeches were delivered. Among the members of the association present from out of town were: Drs. Pagin, Valparaiso, Ind.; Wheedon, Elgin, Ill.; Colby, Woodstock, Ill.; David, Sandwich, Ill.; Campbell, Geneva Lake, Wis.; Currier, Aurora, Ill., and Howard, Highland Park.

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ABUSE OF BRIDGE WORK.

The reckless and indiscriminate use of bridges for the purpose of replacing lost teeth is producing a vast amount of harm, and fast creating in the minds of the people a prejudice against this class of operations.

The bridge, when constructed upon absolutely scientific principles, and having as piers, good sound teeth or roots, firmly set in the jaws, offers the very best method for supplying lost teeth. When thus constructed and properly applied, there is stability, utility and cleanliness combined in the highest degree. When the contrary is the case there is lack of stability, little or no permanent utility, uncleanliness in a great degree and very frequently loss of the pier teeth.

To construct a bridge combining all the best qualities and to properly set it in the mouth requires a high grade of judgment, skill and knowledge of scientific principles. Proper foundation is the first essential in the construction of bridges; and this means as a rule a solid pier at each end of the structure, fully covered by a cap or crown. We have seen in a few instances, when the articulation was favorable, a lateral and a central successfully carried by a central root, but as a rule it is safe to conclude that two piers are essential for all spans.

We have seen two molars and one bicuspid attached to a cuspid and bicuspid root, the distal end of the span resting upon the gum. It is difficult to understand how any one possessed of ordinary scientific knowledge could persuade himself that such a structure could reasonably be expected to long remain useful for masticatory purposes. A small gold clasp plate properly applied would last much longer, be equally serviceable and less liable to destroy the teeth to which it might be attached.

If the crowns for the pier teeth are not nicely adapted to the cervical portions of the roots, there is much probability of injuring the gingival margins of the gum and peridental membrane. In many instances we have seen the usefulness of a pier tooth totally destroyed by a badly fitted crown. A poorly fitting crown applied to a tooth for its restoration only, will be much less likely to cause irritation of the gum and peridental membrane than the same crown if it carried in addition one half of a bridge of three or four other teeth, as the increased force exerted in mastication subjects it to greater danger of injury.

Observation leads us to the conclusion that open bands for the support of bridges, that is bands without occlusal surfaces, do not long remain useful; as the gold cannot as a rule be so perfectly cemented to the teeth as to prevent, if there be heavy mastication, a loosening and slipping gumward of the whole structure; with the consequent evil results. While there are exceptions to all rules, still it may be asserted without fear of contradiction by any one of considerable experience in the manufacture of bridges, that the only safe method for the application of this form of denture indicates, as before said, two solid pier teeth, one at, or near each end of the structure, fully covered by well shaped crowns accurately fitted to the necks of the teeth.

T. L. G.

A WORD OF CAUTION.

That the question of mitigating the pain incident to the performance of dental operations is absorbing the attention of a large number of the profession is undeniable. Periodical literature has been full of it for some time, societies are diligently discussing it, and practitioners are experimenting with the hope of discovering a panacea. We have had occasion on a previous instance to suggest caution in this direction, and we now wish to emphasize this caution. We are fearful of the results when men of all degrees of ability, judgment and experience begin to inject drugs indiscriminately into the gums of their patients without a full understanding of the character of the drugs they are using. We have no word of censure for the man who experiments carefully and judiciously along any line which promises advancement to the profession. We believe in progress. But when this subject of local anæsthetics comes up we cannot forbear raising the question as to how many among those who are using hypodermic injections for anæsthesia to-day have ever given adequate study to the nature of the materials they are injecting? How many understand, for instance, the physiological action of cocaine? Is there one out of twenty who are injecting that drug to-day who knows anything about the proper means of resuscitation in case of collapse from it? Its very uncertainty of action should teach men to be cautious in its use. If it were uniform in its manifestations the practitioner might arm himself more surely against accident, but with our present knowledge of the drug the most experienced in its use can never predict the precise result. We fear that dentists are in some cases taking too many chances, and we wish to warn the younger members of the profession in particular. No young man building up a practice can afford to have an accident, and we would advise any man who uses a drug for local anæsthesia to first study carefully its characteristics and learn something of its action. He should, above all things, provide himself with suitable restoratives.

But worse than all else is the practice of using secret mixtures for local anæsthesia. A man may in a measure arm himself against disaster if he knows the drug he has to deal with, but when he deliberately closes his eyes and injects drugs that he does not even know the name of, he is seriously remiss in his duty to the patient. If a practitioner *will* use a local anæsthetic, if he considers that he *must* use one, let him at least become familiar with the agent he is using, and let him closely note the indications for and against its use.

Another point: In cases where an anæsthetic is employed on the recommendation of some one in the profession who has experimented with it, great care should be used to follow minutely the instructions given as to the proper methods of manipulating it. Attention to details is as important in this as in other lines of practice, and we feel especially called upon to direct attention to this point at this time in connection with the "Answers to questions," of Dr. A. C. Hewett in the present issue of the DENTAL REVIEW. Dr. Hewett's methods will appear extremely radical to many in the profession and in justice to him and to the patients who are to be treated by his method we would advocate the very greatest care on the part of those who seek to follow in his foot-steps.

PLATINUM POINTED TWEEZERS.

At the recent meeting of the Alumni Association of the Chicago College of Dental Surgery, Dr. E. M. S. Fernandez, of Chicago, exhibited the following instruments made after his own idea:

Two pairs of tweezers for mechanical dentistry, one pair being straight pointed, and the other bent at right angles to meet at the points. The improvement Dr. Fernandez claims is that an inch and a half of the pointed end of the tweezers is made of platinum, the object of which is to admit of the tweezers being immersed in acids or passed through a gas flame without the points being affected.

He also exhibited a pair of platinum pointed pliers for operating, which are fine and slightly curved at the end. He has found these very useful for working in and about pulpless teeth, and also for annealing gold. The points can be carried into the flame, or immersed in any disinfectant or acid, or the strongest antiseptics necessary may be used in the treatment of pulpless teeth, without damage to the instrument.

THE PREVENTION OF CARIES.

A recent editorial in the *Medical Record* (copied in the February REVIEW, p. 146) takes dentists somewhat severely to task on the ground that they, for the most part, ignore antisepsis in the practice of their profession. While we are willing to admit that the rank and file of the profession do not give to this subject the attention it deserves, yet we are scarcely inclined to accept the indictment in the sweeping sense in which it was administered. One cannot read the literature of the dental profession to-day without noting that a great deal of stress is laid upon the importance of antisepsis in all departments of our work. That the instructions given by writers are not always carried out by practitioners is only in line with the same state of affairs in the medical profession.

We do not wish to enter into what might appear a pot and kettle argument on this or any other subject with our medical friends, for comparisons between the methods of the two professions do not usually result in much benefit to either. When, therefore, the medical editor raises the question that dentists, instead of bending their energies so earnestly to the insertion of beautiful fillings and model crowns, should set themselves at work on the problem of preventing caries, we are quite willing in the main to agree with him. And yet, by way of parenthesis, we cannot refrain from saying to the medical profession, in view of the prevalence of all kinds of disease in the community, "go thou and do likewise."

Prophylaxis very materially concerns us all and we as dentists can cultivate no more worthy field than that of the prevention of caries. Just how we may successfully intercept decay of the teeth is a problem which has occurred to the minds of many in the profession, and yet we believe it to be a fact that no one has ever yet gone seriously to work along the proper line to accomplish this result. It is clearly demonstrated to-day that the attempt to produce mere mechanical cleanliness of the mouth is not sufficient. The best efforts of the best men in this direction result only in a mitigation of the disease, and not in its prevention. We must resort to a definite line of treatment aimed directly at the cause of the trouble, if we are to gain tangible results. It is generally acknowledged now that dental caries is due to microörganisms, and to successfully combat these microörganisms is the problem.

In the pursuance of this idea we are met at the outset with a peculiar difficulty. The mouth forms one of the most prolific culture grounds for microörganisms in the whole body, all of the favorable conditions being present for the propagation and rapid proliferation of pathogenic bacteria. In view of this it would seem difficult to attain the desired end by means of local applications of antiseptics in the form of mouth washes, and it must be admitted that results heretofore in this direction have only emphasized the difficulty. If we could employ in the mouth an antiseptic sufficiently powerful to instantly destroy all microörganisms, and if we could bring this antiseptic into immediate contact with every space and crevice about the teeth, we might hope to accomplish something. But even then the problem would not be solved in its entirety. Granted that it were possible to destroy all microörganisms at any one time in the mouth by a mouth wash, the fact would yet remain that a new growth would commence operations the moment the effect of the antiseptic had passed away. Our patients cannot be expected to go around using mouth washes at all hours during the day and night, and it is a scientific fact that in most instances the development of pathogenic microörganisms is a matter of a very short time.

We believe then that the problem of preventing dental caries must be worked out along other lines, and we have a suggestion to make as to what these lines shall be. It would seem patent, in view of the foregoing, that if we are to accomplish anything permanent in this direction, we must so change the *conditions* of the mouth that the microörganism of dental decay cannot exist therein. To attempt this may seem utopian, and we are not unmindful of the difficulty of the problem, but we are convinced that this is the only certain way out of the dilemma.

When we speak of changing the conditions we refer to something deeper and more subtle than a mere chemical reaction. There are agencies at work affecting the life forces of the human economy, the nature of which we to-day know comparatively little. We may recognize an idiosyncrasy, but we are not capable of defining the causes which lead up to it. For instance, there are individuals in whose mouths caries is seldom or never seen, while there are others with teeth as well developed, and where even greater care is taken, who lose their teeth bit by bit despite the most persistent effort to save them. The logical conclusion seems to be that in the one case there is a subtle condition present in the mouth which militates against the active agency of the microorganism, while in the other the conditions are favorable to its development.

At the present time we are wholly unable to distinguish between these two conditions—we can see only the results. But the time may come—and we trust it will—when we are able to recognize these conditions and treat the patient accordingly. The idea of vaccination for the prevention of dental caries would offer a most delightful topic for the newspaper humorist of to-day, and yet who knows what the future may develop? One thing seems certain—we must learn more than we now know regarding the conditions that are favorable or otherwise to the propagation of the microörganism of caries, and we must also learn how to modify these conditions before we can hope to successfully prevent decay of the teeth.

DOMESTIC CORRESPONDENCE.

New York Letter.

To the Editor of the Reveiw: New York, Feb., 1894.

February is a short month, for everything is—lent. What fools these slaves to fashion are; can they make good the balance sheet during the forty days cessation of frivolous overdoing? Does it not seem a little unreasonable that the Church feels obliged to go in for religious repairs? We do not think this was the design of Him who originated the Church. We think there is a vast difference between the organization called the Church, and *the* Church. The "Vine" does not go off on a picnic and feel the need of a recess for repairs. It keeps on developing. There is a life that has its limitations and there is also a life that knows no limitations. It is the life of the new creation, and from this comes a harvest that yields her fruit every month. Is there not too much of the thought that these things have little to do with dental practice or one's life in general. What is life? Yes, who can analyze it? Is it not too sacred to temporize with? Yet a good many smart men are doing this very thing. Too many of our number are putting their storage of vitality to a very unprofitable use.

What sad tales we have been told by men who have seen better days. Age has overtaken them prematurely, and they spend their lives finding fault. Spare us from a disappointed premature old age, forced by circumstances to hang on, with a death-grip, our judgment gone. How these fellows, these "prematurely old fellows," do hang on; and to what? Why, some of them hang to amalgam, "that *awful stuff*—the *dernier ressort* of weak ability." Listen. We heard this from one who has put in gold by the "pound" for many years: "The more we look about among our own work and that of the larger number of dentists who stand well, we think, and conscientiously too, that if practitioners would become intelligent in the proper care of the mouth, and by this put the teeth into reasonably good sanitary conditions, then with the same care taken in the preparation of the cavities as with gold, they could save *more* teeth with amalgam than they are doing now. This, to say nothing about hard labor for both patient and operator and a large expenditure of time and money." It is no use to slight facts. The largest proportion of men in New York are to-day filling more teeth with amalgam than ever, and the prediction is that the ultimatum will be that amalgam, so-called, will become the prevailing material for saving teeth in all parts of the mouth, for says the same man: "Do you know that the quality of amalgam has been so improved that a less conspicuous display can be made with it than with any other material, certainly than with gold." Further he says that platina has been advocated for a filling because of its less glaring appearance. He claims that there will be a bigger "new departure" than ever in the second edition that is to come in the near future. It will be a brave man who will dare to face the tornado that may follow. If the veteran Dr. Clowes should attempt this extreme proclamation it would not be a marvel of the age, but he is not the author of this newer departure. One thing is verily true that a healthy mouth is a great factor in saving teeth, yet but very few have learned the art of securing the healthy mouth.

The event of note in dental circles this month has been the union meeting of the First and Second District Societies which was held in Brooklyn. Although it occurred on the eve of the severest storm of the season it was a decided success both in attendance and profit. Nearly one hundred were present, coming from Connecticut, New York City, New Jersey, Philadelphia, and "up the Hudson." Incidents of office practice were of more than ordinary interest. Dr. S. G. Perry, always loaded, referred to an account of an operation of implantation noticed by Dr. Mitchell, of London, published in a late REVIEW. Dr. Perry made the operation seven years ago and renewed it on three occasions, the last time by using a root and splicing a porcelain crown upon it. Dr. Mitchell had seen it during the last season in London and it was firm, but since then the patient lost it, having a plate tooth to supply the place of it until she returned to New York. So great was her confidence in the operation that she kept the conditions favorable for a renewal by forcing the socket open with a tent of cotton and glycerine. Although she had passed through a severe period of typhoid fever and diphtheria this open socket had been faithfully cared for. Dr. Perry has lately resupplied the root and porcelain crown. This case illustrates persistency and a degree of success worthy of attention.

Dr. A. H. Brockway gave an account of a prominent physician persistently seeking to convince him that his daughter's teeth should be filled with gold because his teeth were so filled thirty years ago and had proved satisfactory. As the doctor described the case, it was one so familiar to many, almost a doubtful issue with any kind of material. But by the use of cement it was far more successful than he hardly dared to hope, he lately having seen the case and found only two repairs necessary.

This case suggests the question, Who knows? For "teeth that most need saving gold is the poorest material" that can be used. Dr. J. Foster Flagg will enjoy life more for seeing this in print, for he was in danger of being assassinated at the time he uttered the remark, but it is going to be more and more true in the future. If the doctor was a little "cranky" he has kept on turning the crank, and has got fat in doing it. We don't believe all he has ever written; but we know a good thing, when we have proved it true.

Dr. Barker introduced some tinsel copper strips which he advocated for winding about teeth, serving as a matrix in inserting cement fillings of any kind. The same idea would prove valuable we think with other metal strips. We have not used copper in connection with amalgam as we supposed it would produce a decided metallic effect, but, if not, it will prove valuable on account of its pliability. We have been in the habit of putting a metal band about very badly deformed teeth and placing our amalgam, letting it remain till the next day. In this way we can successfully secure an entire crown of amalgam. Dr. Kirk's paper was a very valuable contribution, proving all that it claimed, by chemical experiment. As it will be published in the March number of the *Cosmos* we need hardly speak fully of its substance. Oxychloride of zinc forms a carbolate of albumen in the tooth structure by osmotic action. Chemistry settles this fact. It is doubtless an indestructible material, and this proves what Dr. Atkinson always claimed that the use of creosote in the care of exposed pulps, formed a carbolate of albumen over the exposure, and also that chloride of zinc was the best medicament to put in a pulpless canal, claiming as he termed it, that it mummified the fibrils or albumen. We have been long convinced of the truth of this practice. Dr. Harlan is of such good metal however that this will brush him up and he may coagulate a little at first. It is the one who laughs last who laughs best. Manly agitation is what is needed to bring out the truth; lazy men do nothing in this line.

The collation was in fine form; just a *fit* for healthy stomachs, not too much nor too little. President Hill was as bland as olive oil. He did not talk too long, but very much to the point. He said we are all more or less practicing empirically; and chemistry comes along and tells us what happens. So it has in what Dr. Kirk has demonstrated. Well, on the whole, this meeting was away ahead of many meetings held.

The proceedings of the California State Association have come to hand in neat and plain type, but some errors in typography. We think some of these errors are too faulty for repetition in so many instances; "these" occurs too often where *there* should be, in the paper of G. A. Mills. If those fellows had read their Bibles they would have seen that it was a Scriptural title. We have but few journals that are faulty in this respect, although we do have journals that are a standing reproach to those who publish them. Prof. Truman has the courage of his convictions. His editorial in the February number of the *International* is squaring fully up to the demands of the age. "Are our dental organizations satisfactory?" We trow not. There is cause for an active consideration of this whole question. Our fault is not only over legislation but unwise legislation. "Representation from the local to the national should be based solely upon original work. Mere membership should have no weight in selection." We ask, how will the fault be remedied if left to the local body which is so commonly saturated with selfish and ambitious politics? Men who are seeking for position and have not a particle of claim for intelligent consideration are going to keep in with the voters who will place them in the positions they are clamoring for.

The best expression of valuable scientific contributions cannot thrive in any body that has part or lot in the present spirit of dental politics. We repeat what we have before said. The only proper body of persons to encourage real scientific work is one that has nothing else on hand. Let the membership be increased only on the merit of the contribution; and this decided by scientific men who have no political ambition. Prof. Truman's courageous editorial should call out the best thought of all editors and practitioners. We are not in favor of the societies drawing the line on the degreed practitioners so long as the State organizations persist in conferring degrees in the face of dental schools, and having one law in one State that conflicts with one in another State, and even conflicts with our national rights. Those in charge of our schools do not show much pluck in submitting to it. Why do not they show the courage of their convictions along this line? It does not require much wisdom to answer this question. The retroactive phase in dental law is a reproach to good sense, to say nothing of justice. Every man of common sense knows it is unconstitutional. Then why compel practitioners to suffer anoyance in going from one State to another, if circumstances compel them. We mean those who were in practice before this legislation. We said to a Connecticut Yankee dentist lately, "well, your State has got a law." "Yes" he replied, "we have got hair on our backs." We asked, "does it bristle any?" "Certainly." These hairy men are not highly bred. Plenty of them are to be seen in the dime museums.

Who can answer the question we ask concerning the following case? We have the models of the superior and inferior jaws with the thrity-two crowns entirely gone and the roots remaining. Thirteen months ago all these crowns were complete and no decay. One by one they commenced to fall away, not by what we term erosion nor abrasion but by dissolution and crumbling with no pain attending. The last crown, a superior central incisor followed the rest this month. We are to replace by artificial teeth placed over the remaining roots as they are not of sufficient texture for crowning. The patient has been habituated to the use of morphine for a few years, first using it for excruciating pains. He is a lawyer by profession. We give this opinion ventured by a medical man, that possibly the sulphate of morphine caused the generation of sulphuric acid in the system. The patient's physician told him that he did not believe a word of it, but said he could give no reason. Can any one surmise a reasonable cause? Chemistry must settle these vastly important questions.

The New York Academy of Medicine rattled the dentist a bit at a late meeting for not being as they claimed, antiseptic in their practice. A little exchange of thought might be profitable.

Our Brother Taft, D. M. D. who has gone West took his homeopathic proclivities with him as seen in the leader of the *International* of February. We notice he deals allopathic doses to Drs. Shepard, of Boston and Williams, of London; ditto to the Massachusetts State Society. Caustics are effective if according to the regulation. We are willing to trust him in Dr. William's care for he is a good disputant. So far as Dr. Shepard is concerned we are not so sure how far he goes in dilutions. However, we think he is in favor of potencies. He is a good deal like the man who came to New York for the first time and took a Roman punch. It suited him so well that he ordered a second one, asking the garcon if he " would put a good deal of the Roman into it." The doctor has attained the highest degrees in dental practice and associations. We reckon he will be quite modest for the future. Where would Boston be without a Shepard ? There can't be but one hub for a wheel, yet there will be many of spokes.

The meeting of the Odontological Society was noticeably thin by absenteeism. Yet all goes smoothly. Dr. Brockway presides with quiet grace. Dr. S. B. Palmer was present from Syracuse. He is a live man three hundred and sixty-five days in a year, and is always fresh and takes age smilingly. Men who work and think little of personal piques, do not have any time for souring. Dr. Palmer is giving the students of the "new" New York Dental School the benefits of his industrious life, and they must profit by it. The course of four lectures he is giving them will be remembered in after-days and will bear fruit. More such men are much needed. His electrical theories have gained attention by thoughtful practitioners. Dr. George Parmlee, of Hartford, Conn., was present at the meeting. How he has taken on size. My, how we do change as years go on. Some get big and gray and some get thin and gray—and bald. We think Dr. Parmlee stands for the profession as much as any dentist in Hartford. None more up in dealing with Riggs' disease effectually. His father was a very worthy practitioner for many years in that city. Riggs, Parmlee, Crofut, Preston and Wells make up as good a coterie of dentists as commonly falls to the lot of one inland city. Dr. Parmlee Sr., was ambitious for his profession and believed in having a fitness for one's calling, and he did not fail to give Dr. George Parmlee an education that should secure that fitness. Beside the excellent advantages given in the Hartford schools, he graduated from Bellevue Medical College and took his D. M. D. from Harvard. We think he has an intelligent demand for his services from a class which appreciates conservative practice. Dr. Charles Allen, of Newburgh-on-the-Hudson was the essayist of the evening at the Odontological Society. He gave a plain and decided portrayal of eclecticism in practice. We all come to this if we are intelligent. Age and experience crystallizes into this ultimately. One thing it was thought he did not emphasize enough—that was tin. We cannot do our best without tin. No more worthy material in the list. Where it is indicated tin and gold will hold a strong place also. We have some specimens of its value in our family.

Last, but far from least, Jersey hornets swarmed at their annual. They swarm every two months, but never show much stinging quality. We don't think that their sting is as deadly as Jersey lightning. They have got grit and push, lots of good cheer, and with one of their dollar menus inside of a fellow, one goes home satisfied. Long live Jersey.

Quid Nunc.

Editor Review:

Since the appearance of my article in the January Review, I have been asked to explain the method of attaching porcelain facings in crown and bridge work without exposing them to heat, and thus avoid the possibility of checking them. These inquires have been so numerous that I decided with your permission to make one answer do for all by publishing it in the Review.

The porcelain face should be slightly beveled all around the edges and pure gold twenty-eight to thirty gauge is the proper material for the backing as it is soft and stays to place. In the process of fitting the backing the gold should be annealed often, then burnished and tapped with a riveting hammer to position. This will give an accuracy of adjustment that is not approximated by the man who is satisfied to solder his backings, and who never checks a tooth. After the backing is thoroughly well fitted, proceed with the work as in the ordinary method, but after the backing is waxed in proper position to the other metal parts of the crown, and before investing for the soldering process, slip the porcelain facing off. Cover that portion of the backing that comes in contact with the porcelain facing, with a paste of plumbago and water, allowing it to pass into the pin holes of the backing, invest as ordinarily and proceed with the work just as if the porcelain was in place. After the soldering is completed take a spear-point drill, using oil for a lubricant, and bore out holes in the solder for the pins of the facing, the holes in the backing being the guide as to where the pin holes should be. Now countersink the pin holes, or what is perhaps still better, simply make the holes a little tapering with the large end of the taper nearest the free end of the pin. Place the porcelain face on the backing with a film of cement between, invest the facing in sufficient bulk of plaster, which when hard gives a splendid back or support for the facing during the riveting process. This latter may be accomplished by a smooth end plugger-point about as blunt as the end of the pin, being tapped gently by the hand-mallet, or more rapidly perhaps by the mechanical or pneumatic mallet. A good many of these little details are original with Dr. W. H. Taggart, of this city. I claim no originality for any part of the process.

Of course any number of crowns may be attached in this manner in bridgework, and the porcelain facings being adjusted after the soldering is all done there is absolute assurance that there are no weak sisters among the members.

The soldering process is not new nor difficult for me, as I am not a novice in this work, and am conversant with the best methods of investment, heating up and soldering. It is not necessary for any one to tell me that the investment should be thoroughly heated, and that the plate gold should be equal in temperature to the melting point of the solder in order that the latter shall flow nicely. I have passed through all that, and venture to say that I am as familiar with all the necessary steps as a student of the post-graduate school. I also know this, that the conditions in soldering a tooth to a plate and to a bridge are entirely different, a point that seems to have been overlooked by some would-be critics, and the man who thinks he never checks a tooth in soldering is deceiving himself, as he cannot see all the checks that come. I do not claim for a moment that visible checks appear in all soldered teeth, but they are there just the same—a fact any one can convince himself of by grinding the tooth down to the pins, polishing the surface and putting the case under a strong glass. A line will invariably be found running in both directions from each pin. That is what weakens a tooth. The cause that produces these blemishes is the unequal expansion of the metal and the tooth substance, a fact which has also been practically demonstrated. There are two other reasons why riveting facings is far preferable to soldering, one of which is the relief from anxiety and worry lest while the case is being heated, soldered and cooled a check *should* appear. Nearly all men admit that sometimes they have had teeth check, and if they are conscientious in their work and in their desires to produce the best and most perfect results, they never solder a case without this dread.

The other reason is the artistic results obtained. The perfection of the joint between the tooth and backing is not approached in a solder case, and besides, in a solder case the blue line is nearly always visible at the neck of the tooth to disappoint you, and the color of the whole facing may be changed. There are other arguments to be used in favor of this method, such as greater perfection in flowing the solder just where you wish it to go—especially on the labial side of the band which needs contouring to restore the original shape of the root. Solder may be flowed over this to any extent desired. To be sure if a man does not cut the root down to where it ought to be before banding it, he will not find any necessity for this step.

I claim that it has been proven that the riveting plan is better than soldering for many reasons, and that progression is only made by discarding old methods for new when the new ones are demonstrated to be better. The man who does not do this is not living up to the possibilities within him, and is therefore not doing his duty, to himself or to his patients.

"Do your best, your very best and then your best will better grow."

A. W. McCandless.

REVIEWS AND ABSTRACTS.

Yet Another Professional Holiday. The World's Columbian Dental Congress. By Dr. George Cunningham, Cambridge, England.

[continued from february review, page 140.]

No congress, be it of the classes or of the masses, be it in the far, far East, or in the wild and woody West, is complete without a feast; a kind of materialization, I take it, of the proverbial, if occult, feast of reason and flow of soul, which such gatherings provide to satisfy the intellectual cravings of the inner man.

In this case, it was precipitated, in the form of a banquet, at the Chicago Beach Hotel, on the eve of the closing session, and some two hundred and fifty members, including a number of ladies, "processed" from the reception room to the elegant and spacious banqueting hall, to the strains of orchestral music. The artistic menu card bore the happy title, "Dinner Given by the American Members of the World's Columbian Dental Congress to their Friends from Abroad," and in the center was a portrait of Columbus, draped with the stars and stripes, with his old historic ship, the *Santa Maria* in the distance, and three sea gulls, indicative, I was told, of land. But some one somewhat maliciously whispered, "Aye, England! because there are only three of you here, while Spain has sent us fifteen." I protested his interpretation must be wrong, since we were five, "No, no, only three here, the other fowls have flitted to the fair, are probably lost in the Midway Plaisance, and consequently could not be set down on the '*K'rect Card*!' Well, anyway, there a'int *no flies* on you three!" A not very euphonious expression, but conveying, I presume, no small compliment, and a rather obvious effort to maintain the analogy of the birds, hence the response, that we were not to be "gulled" by fulsome compliment.

Dr. Swasey, of Chicago, the portly, yet active chairman of the committee on reception, presided, and in more senses than one adequately filled the chair. The "friends from abroad," representing some twenty-seven different nations or countries, were mostly at the high table, with the President of the Congress on the right, and the representative of Great Britain on the left of the chair. After doing ample justice to the menu, the wine, and, I trust, the wit and humor of our pleasant table companions, and, as the fragrant fumes ascended, denoting a general worship at the shrine of our sweet Lady Nicotine, our rapt attention was excited by the stentorian tones of the Chairman. Happily, in the United States the absence of any conventional toasts is not regarded as incompatible with either loyal sentiments toward the powers that be or patriotic feelings toward one's own country. His address was, therefore, direct, appropriate, and succinct. After alluding to the congress as one which would soon only live in memory and history; as one of the greatest meetings ever held by the dental profession; as one affecting dental education in every land where dentistry is known, from its valuable additions to dental science; he paid eloquent tribute to the President, the executive committee, especially the Chairman and Secretary thereof, and above all, the Secretary General, for their dilligent three years' work, which had produced so grand a meeting. He made a brief but telling allusion to the milk of human kindness, which had purified professional jealousy, and concluded with a hearty expression of gratitude on the part of American dentists to the foreign members, who had so nobly responded, both in person and by pen, extending to them the right hand of fellowship and good wishes for their safe return to the homes of their birth or adoption. Need it be said, that his short, but able speech, was rendered trebly eloquent by its unmistakable ring of sincerity, and the vociferous applause with which it was profusely punctuated.

When the storm of applause, evoked by this speech, had subsided, the Chairman announced that there was to be no formal toast list, but only a kind of friendly, convivial, go-as-you-please competition; any one called upon might make a speech on any subject he pleased, bar one, and that was dentistry; he might sing a song, tell a story, or stand on his head and look pleasant. As was to be expected, such an announcement provoked considerable amusement. Then, armed with a empty bottle in place of gavel, our Chairman and Toast-master,

> " Rapt with zeal, pathetic, bold and stròng,
> Roll'd the full tide of eloquence along."

Hereupon the President of the Congress rose, meeting with the hilarious reception he had so well deserved, but his singing days being over, having no desire for repute as a story teller, and having passed the age of terpsichorean or acrobatic exploits, he wisely did not forget his dignified position, and made a graceful, eloquent address to his audience, as occupying, one and all, an equal place, with equal rights, on the same broad platform of legal dental practice on ethical principles, entirely regardless of race, nationality or sex. After calling attention to the active support and presence of the entire dental profession of Chicago to a man, he dwelt on the truly international character of this congress of dentists, and indulged in, he trusted, the not vain hope that some of them would live to see the day when a diploma from the respectable educational institutions of our respective countries would be regarded as a professional passport from one's government, securing its possessor equal rights in any country where he might locate in order to devote himself to the support of himself and his family and to the good of humanity. Then, indeed, would exist a true brotherhood of science, a real brotherhood in art, an incontestable professional brotherhood such as we dare not now try to realize. The inspiring thought of an international diploma was worthy the occasion, was tumultuously received and evidently struck a sympathetic cord, which vibrated that whole long night.

Dr. Eric Richter, in replying for Germany, endorsed the sentiments of the President, and asserted that the only way of achieving such a consummation, devoutedly to be wished, was by this becoming the forerunner of many similar gatherings.

La Belle France, proud mother of the first International Dental Congress, roused our enthusiasm in the person of Monsieur Charles Godon, of Paris, and in the language of all others, the most telling, that of his country. He advocated the formation of a standing committee of organization to promote these international congresses, and suggested other countries might well follow the example of France, where such a committee had been formed. He ended by saying that his countrymen looked forward to entertaining them at a similar banquet in 1900. *Vive Paris! Vive la France!*

Like several of the subsequent speakers, M. Godon not only represented the dental societies of his country, but was also the official delegate of the government. We sadly missed his *confrèrè*, Monsieur Rounet, who had come all these weary miles only to be struck down by serious illness on reaching the goal of his desires. Poor friend Rounet may be remembered as having attended the Brighton British Dental Association meeting, where he distinguished himself by the rapidity with which he acquired English on the kindergarten principle adapted to adults: *e. g.*, you learn the name of, well, say a drink, and then you have it; "Gin and ginger beer," is said to have been his first lesson, but, when he had mastered his lesson and was presented with it in a large soda-water tumbler he complained to his smiling colleagues in French, that he had ordered a drink, not a bath. His linguistic repute must have spread far, if we may judge from the following item in the daily edition of the *Dental Tribune*:

"Although Dr. Rounet only arrived forty-eight hours ago from Paris, he has already acquired a fair knowledge of English. Here is the way he says "God save the Queen," "Gotsaveteken."

Rumor hath it that he had never taken any lessons since, but had come to Chicago expressly to renew them, with a view to replying in English at the banquet. His former professor, aye, and many others, were disconsolate that all their hopes were frustrated, and that that merry meeting at the club, on the night of arrival, was so quickly followed by such thorough ill-health that he had to renounce his tour of the American dental schools, and to return home.

> "Let Hercules himself do what he may,
> The cat will mew, and the dog will have his day."

And so it came to my turn to amuse as best I could. I endeavored in a pictorial speech to demonstrate that dental meetings have other very useful aspects, besides the promotion of science, the promotion of good fellowship and excellent opportunities of having a high old time like the present. By means of a projection lantern, some snap-shots of social groups, such as Professor Miller in his "studio," Silvester and the Kaiser's understudy, and others, taken at the Berlin Medical Congress, enabled me to urge the duty, not to say the pleasure, of participating in all the international medical congresses; another series of slides portraying some of the faces and incidents of professional life to be encountered at the meetings of our national association and its branches, gave me an opportunity of assuring our friends from the other side that a cordial reception awaited them, and of pointing out that smaller gatherings like these enabled us to show even more personal attention than mammoth gatherings like international congresses.

A few other slides illustrative of groups at this congress, brought my remarks quite up to date, and formed somewhat felicitous pegs on which to hang some expression of the obligations my colleagues and myself felt under to many of those present. The last one showed the Secretary General of the congress at home with his wife and family. As "Arriet" said of Kiralfy's Constantinople, "it took the *caique*."

I had been very nervous and apprehensive about the success of a somewhat rash venture. After darkness, cometh light. This is what the DENTAL REVIEW said about it: "Dr. Cunningham was warmly applauded for his very entertaining and exceedingly humorous lantern lecture. It was one that will long be remembered, and was a pleasing diversion for the members."

Denmark, Spain, Italy, Greece, Austria, Holland, Canada, Switzerland, Russia, Uruguay, Paraguay, Colombia, the Sandwich Islands, and the Phillipine Islands, all found eloquent representatives, sometimes in their own language, sometimes in English.

Americans abroad provided good speakers in Drs. Mitchell and Rathbun, and the ladies, a happy little speech in French, from Madame Caracatsanis, of Athens; while little Wales, through Mr. Clarke, longed for an opportunity to reciprocate all the kindness and hospitality shown him. It was a great speech night, unique, polyglot, and vastly entertaining. But even moments, winged with pleasure, must have an end, so the Secretary General briefly gave us the orthodox closing toast, the Chair; we drank it with musical honors and hearty cheers; he replied; everybody sang "Auld Lang Syne," and then the lights went out. Vale! Ae man, but it was a grand nicht.

Up late o' nights did not prevent a large proportion of members, and certainly not the officials, from being at their post. The attendance at the closing session, especially considering the inevitable strain of a very busy week and the counter attractions of the World's Fair was not only surprising but unprecedented. The proceedings were nearly as interesting, and the enthusiasm as marked as at the opening ceremony.

A number of reports of the committees, such as those on the History of Dental Legislation and on the Care of the Teeth of the Poor, were read by title only, and will appear in the "Transactions of the Congress." Several papers were treated in a similar way, but mainly from contributors *in absentia.*

It cannot be said that the topic for discussion: "What Relation shall Dentistry hold to Medicine?" was adequate to the importance of the subject, mainly, I think, from the absence of any one specially appointed to open the debate. It certainly is an excellent plan to have a previously prepared list of topics for discussion, but some equally prepared "opener" and, when possible, "opposer" should also be on hand, otherwise what might have been a valuable debate is apt to degenerate into little more or less than an expression of opinions, interesting it may be, but lacking force and sequence.

In this instance, Dr. Patterson, Kansas City, thought that the cause of dentistry would not be hastened by such discussions, and that the most rapid progress had been made by dentists as an independent profession. Dr. Crawford, Nashville, argued in favor of associated work by having a well-equipped section in dental and oral surgery in every medical organization in the country. Dr. Fletcher, St. Louis, was of opinion, that dentistry should be taught in institutions conducted for that alone, as attending the lectures and instructions in a medical college did not afford the proper opportunities from the medical students receiving first and undue consideration. The subject was then passed.

Then came my *quart d'heur de Rabelais*, yet none the less one never to be forgotten by me. The report of the Committee on Prize Essays was then read, in which it was announced that I had been awarded the medal for the best essay on Oral Hygiene. The President of the Congress made a graceful speech which, specially touched me by his kindly reminiscence of our former relations, he as my professor and I as his student long years ago at Harvard. As he pinned the medal on my coat, he trusted that I would not only be proud of it, but wear it at every dental meeting which I attended. That brought a smile at the thought of what some of my friends at home would think, aye, and some of them say, were I to obey his behest. I think that he understood that smile; I hope so.

The medal is certainly a very pretty one, consisting of a gold bar or clasp from which is suspended an elaborately worked octagon-shaped medal with a laurel wreath in the centre, executed in three different shades of gold, and suitably engraved.

I must confess that I was more affected by the overwhelming warmth with which the award was received by that great audience than by the award itself. I simply bowed my acknowledgment to President and audience, and took my seat. The applause still continuing, the President announced that it had been arranged that no speech was expected from me on this occasion, but if they insisted —and insist they did. What I said I scarcely know, nor does it matter now; I trust my audience realized that I felt full appreciation of the award and their reception of it. I must also express my gratification to the many friends both at home and abroad for their many and hearty congratulations.

I sincerely trust these allusions to this event will not be regarded as entirely egotistical, as, through no fault of mine, the situation was something more than a mere personal one. If justification is needed, it is to be found in the concluding sentence of the editorial article in the *Dental Cosmos*, on "The Lessons of the Congress." "The awarding of the prize essay medal to Mr. George Cunningham, of Cambridge, England, was, in this regard (viz.: a better understanding by those abroad 'of the motives of cordial good-will and *esprit de corps* animating the organization,' and the absence 'of any feeling of resentment on the part of American dentists, created by their misunderstanding of the attitude of some of their foreign *confrères*') a source of much gratification to those interested, not alone because of the exceptionally high character of his essay, but because it was in some sense a tribute animated by the fraternal regard entertained for the profession of England, despite individual differences of opinion, and gave additional emphasis to the impersonal, universal spirit of the Congress."

Monsieur Godon then submitted a resolution, supported by the signatures of some fifty foreign members, to the effect, that under similar circumstances another International Dental Congress should be organized, which was adopted unanimously. He also, on behalf of the foreign representatives, expressed their thanks to the different officials of the Congress for the many courtesies received, and their appreciation of the excellent manner in which their duties had been fulfilled.

Dr. Taft, in the absence of the Chairman of the Executive Committee, returned thanks, and expressed their gratification at having achieved a grand and undisputed success.

The President then delivered a valedictory address, ably epitomizing the most prominent features of its conduct and its progress. With the hope that in the future an exigency like the present should be the motive for the formation of another World's Dental Congress, he formally declared this World's Dental Congress adjourned *sine die*.

On leaving the hall, each foreign member was presented with a very handsome and massive bronze commemorative medal. We were also invited by the President of the Congress to accompany him and his friends to the Great World's Fair, where an excellent luncheon was served. Ample justice was done to his generous hospitality; full expression of our gratitude followed, and then we parted to visit the wondrous White City. And so ended the grandest combined effort our profession has ever yet made. Did I say "ended?" Not so, for the full import of its success will not be realized until its transactions appear, and the value of its work will affect dental education, dental science, dental progress for all time.—*The Dental Record.*

PRACTICAL NOTES.

Finishing Alloy Fillings.

By T. J. Borland. D. D. S., Milwaukee, Wis.

So many dentists who profess to stand in the first rank—and who are really good men with good intentions—are very careless regarding the finishing of their alloy fillings. As a matter of fact they charge a *first class* fee, but often fail to give a first class filling in return.

To the graduate of the later schools, where particular attention is paid to this important detail, the sight of a once well prepared cavity with a mass of alloy thrown into it, patted a few times with a spatula and dismissed as a "finished" piece of mechanical art, is indeed trying; and especially so to the young practitioner when he is informed of the fee charged and readily paid, because of the *reputation* of the operator.

Many fillings of this class present an appearance which compares favorably with that of mortar plastered on a stone wall with the mason's trowel.

It is impossible for the patient to keep the interdental space free from debris where there is a large approximal filling, the cervical margin of which protrudes from the cavity all the way from the sixty-fourth to the sixteenth part of an inch! Yet, if we examine the mouths of those who visit our operating rooms from day to day, we will find many fillings presenting such a condition.

No matter how well the worker in brass may shape and form his wares, if they lack that beautiful polish of which that alloy is capable, they are unattractive and unsightly.

I believe that it is not possible for the busy dentist to conscientiously *finish* an alloy filling at one sitting—as it should be left a little *too full* in order to insure good results. With the amalgam well *dried*, the heating of the instruments used in packing into the cavity will insure more rapid setting.

The patient should be given a future appointment of from fifteen minutes to half an hour, for the purpose of finishing and polishing. Where accessible cut down with corundum points, flush with the surface of the tooth, and polish with moose hide and fine pumice. Use disc on approximo-buccal and approximo-lingual surfaces. Approximal and cervical portions should be finished with strips.

The cervical margin should be well smoothed down at first sitting with thin spatula or small rope of cotton drawn through the space.

We may not be able to charge for our extra work, but the durability of well finished fillings will insure future recommendation, which will more than repay for the time spent.

MEMORANDA.

Are you going to St. Louis?

Do not forget the Midwinter Fair Dental Congress.

The February meeting of the Chicago Dental Club was a rousing good one. The President, Dr. Taggart, read an interesting paper entitled "Artistic Effects in Crown and Bridgework." The discussion was lengthy and animated.

Several dental journals have announced that the "thirteenth" annual meeting of the Illinois State Dental Society would be held next May. Oh, no, our beloved old society is more venerable than that. It should be the thirtieth annual meeting.

Dr. Herbert C. Miller, of Portland, Oregon, offers to the profession a new book for dental records. The principal feature is the diagram. All of the surfaces of the teeth, together with the roots, are made to appear as perfectly as can well be done in a diagram.

The President of the Mississippi State Board of Dental Examiners has written the Secretary of the Illinois Board expressing his approval of the method adopted by this board for examining candidates, and asking for duplicate questions to be used in their examinations.

A lady patient recently gave expression to a reform in nomenclature which we commend to the notice of those who are studying this subject. We had a piece of rubber dam in our hand, when she looked up and asked: "Are you going to use that bit of 'elastic profanity' on this tooth?" Quite euphonious, and certainly very expressive.

Wednesday evening, March 7, was a gala night at the Grand Opera House in this city. The students and faculty of the Chicago College of Dental Surgery attended the opera "The Fencing Master" in a body. Some exceedingly beautiful floral designs were tendered by the students to the several performers. The theater was decorated in honor of the occasion and a *fac simile* of the college pin was suspended in front of the boxes. Altogether the occasion was most enjoyable.

THE TRANSACTIONS OF THE WORLD'S COLUMBIAN DENTAL CONGRESS.

The Transactions are now nearly ready for the final proof reading. It is therefore very desirable that those who want extra copies, and those who would like to subscribe for them do so at once, as it is the intention of the Committee of Publication to print only a sufficient number of copies to supply the members of the Congress and those who have subscribed for them. The subscription price is $10.00. Subscriptions should be sent to Dr. John S. Marshall, Treasurer, 1003 Venetian Bldg., Chicago, Ill.

Section I. of the American Dental Association sends out the following:

Dear Doctor: The next meeting of the American Dental Association will be held Tuesday, August 7, 1894, at Old Point Comfort, Va.

Will you prepare a paper for this section on Chemistry, Crown Work, Orthodontia, Plates, Metallurgy, Obturators, Bridge Work, etc., etc?

If any new mechanical devices or novelties have been presented to your State or local societies since August, 1892, will you furnish this section with them?

R. M. SANGER, *Chairman,*
557 Main Street, East Orange N. J.

ALONZO BOICE, *Secretary,*
1,612 Vine Street, Philadelphia.

OBITUARY—DR. HENRY SNOWDEN.

Dr. Henry Snowden, one of the publishers of the *American Journal of Dental Science,* and the senior member of the firm of Snowden and Cowman, died at his residence, 2,104 Oak Street, Baltimore, Md., January 16, 1894, in the seventy-fourth year of his age.

Dr. Snowden had been identified with dentistry for many years, formerly as a practitioner and latterly as a dealer in dental materials. He was known as an honest, philanthropic, open-hearted, lovable man, as is amply indicated by the numerous tributes of tender esteem that have been spoken and written in his memory.

A daily paper comes to hand with the following important (if true) announcement, in which is also mingled a trace of pathos. In speaking of a certain gentleman being at a certain hotel, it concludes by saying that he is "doing some of the finest work in removing tartar from the teeth and giving to each patron a wash which he guarantees will keep the teeth free of this noxious tartar. Mr. —— had the misfortune to break his wrist about a year ago, and it is just strong enough again to resume his profession of cleaning teeth. During the interval elapsing since his misfortune, he has been manufacturing and selling a catarrh cure which is highly recommended. If you want your teeth cleaned and made to look really fine we can heartily recommend Mr. ——, as we have seen his work, in fact have had him do work for us, and it is first class."

ST. LOUIS DENTAL SOCIETY.

The committee appointed by the St. Louis society to arrange for their approaching meeting, March 20, 21 and 22, reports the most encouraging progress. Clinics will be given in continuous gum work, bridge work, crowns of all kinds, fillings, and in fact every variety of work capable of demonstration. The following gentlemen have already promised to participate in the meeting: Drs. J. Taft, I. P. Wilson, D. J. McMillan, G. A. McMillan, C. J. McBride, Patrick, Crouse, Harlan, Gilmer, Hungerford, Thompson, Ottofy, Pruyn, Goodrich, Call, Campbell, Tibbets, Hughes, Davis, Custer, Cochran, Perry and others. With such an array as this there can be no doubt about the success of the meeting. We urge our friends to attend, and are prepared to pledge them on behalf of the St. Louis coterie, a most pleasant and profitable time.

CHICAGO, Feb. 22, 1894.

Editor Dental Review,

DEAR SIR: I herewith send you a copy of a letter received, which I think is interesting enough to be published. With regards,

FRITZ W. HUXMANN, D. D. S., Secretary.

"*Dental Examiner's Office, Chicago.*

"DEAR SIRS: Please find enclosed one One Dollar bill, for which please sent me a certificate to fill teeth.

"Am a graduate of the college of Medicine and Surgery in the University of ———.

"Graduated in 1890, 26th of June, practiced in —— 3 yrs. in Medicine and Surgery and some Dentistry. The reason why I wish a certificate is that some of the Dentists would kick down here if I did not have one. And I have patients who wish me to fill and clean their teeth and hense wish a certificate.

"But as far as the laws is concerned I can fill a tooth, to stop the pain just as quick as to extract the lens of the eye. It comes under Surgery and there is no limit to my performing any kind of Surgery. Providing I can do it, whether Medicinal, preventitive, or curitive. Respectfully yours,

"———, M. D."

REMAINDER OF QUESTIONS PREPARED FOR CANDIDATES BY THE STATE BOARD.

METALLURGY.

1. I. What is a metal? II. Describe five metals and their uses in dentistry.

2. I. What is the order of metals used in dentistry as heat conductors, taking silver as a standard of 100? II. As to their power of conducting electricity, and their malleability.

3. I. What is the nature of an alloy, and of what is it composed? II. What effect does alloying have upon the color, malleability and tenacity?

4. Composition of gold coin, silver coin, brass, German silver, type metal and Babbitt metal.

5. I. Formula of soft solder, solder for silver, 18 and 20 karat gold, platina and fluxes used. II. How are base metals added to gold and silver, making solders and amalgams?

6. I. Desirable qualities of a dental amalgam. II. Reasons for its discoloration. III. Influence of zinc, tin, gold, platinum, antimony and copper on amalgam. IV. Formula of a good dental and a good copper amalgam.

7. Symbols, atomic weights and fusing points of zinc, tin, gold, silver, platinum and aluminum.

TOXICOLOGY.

1. Poisoning by arsenic and antidotes. 2. Poisoning by iodine and antidotes. 3. Poisoning by hydrargyrum and antidotes. 4. Poisoning by acid. carbolicum and antidotes. 5. Poisoning by anæsthetics and antidotes. 6. Poisoning by opium and antidotes. 7. Poisoning by cocaine and antidotes. 8. Influence of rubber on the mucous membrane. 9. Influence of metal plates on the mucous membrane.

The examinations in Prosthesis, Hygiene and Orthodontia will be conducted by Dr. G. A. McMillen. Those in Theory and Practice of Dentistry and Clinical Dentistry will be conducted by Dr. Letcher Irons.

The examinations conducted by Drs. McMillen and Irons will be verbal.

NOTICE.—The Illinois State Board of Dental Examiners will meet on Saturday, March 17, 1894, at 8 A. M., in the office of the Secretary in the Schiller building, Chicago, for the examination of candidates. All those who wish to be examined by the Board at that time are requested to notify the Secretary of the Board by Friday, March 16, 1894.

The candidates must bring their own patients to demonstrate their ability in operative dentistry. The candidates and patients must be on hand promptly at at 8 A. M., Saturday, March 17, 1894.

FRITZ W. HUXMANN, *Secretary*,
1600-1605 Schiller Building, Chicago.

Written for the Dental Review.

ODE TO THE DENTIST.

I

Away from his pastoral station
  The overworked minister goes,
And finds in a summer vacation
  Relief from a clergyman's woes.
But Dentist, O wonderful creature!
  When once you have taken a hold,
With much truer grit than the preacher,
  You pull through the heat and the cold.
Sometimes you are rough;
  They say you are tough;
Sometimes you are cruel and bold.

II

Accepting the Bible as teacher,
  And taking its laws for our guide,
In summer, if left by the preacher,
  Perhaps we can stem the rough tide;
But if *you* should ever forsake us,
  Made reckless with poor aching jaws,
Old Satan might reach up and take us
  For breaking the Scriptural laws.
So Human Scare-Crow
  You very well know
We like you with all of your flaws.

—*Willie Taylor.*

THE

DENTAL REVIEW.

VOL. VIII. CHICAGO, APRIL, 15, 1894. No. 4

ORIGINAL COMMUNICATIONS.

OPERATIVE TECHNICS.

BY THOMAS E. WEEKS D. D. S., MINNEAPOLIS, MINN.

"New times need a new system."

"To prevent going backward we must work on the line which goes forward."

In the early history of dentistry the young men who received their training from the best practitioners were, by much practice in the laboratory, of the purely mechanical or technical, taught to be "handy," but with the increasing demand for a more general scientific knowledge, there grew a tendency to platform instruction—an extension of didactic work at the expense of the practical. In many instances this resulted in a cramming of the head which left too little time for training the hand.

There is no escaping the truth of the relations existing between the mind and the hand. Some one has called the hand the moral rudder, the balance wheel of the mind. Certain it is that what the hand is to execute is originated in the mind; then through the eye, the mind directs the hand. Simultaneous training of the mind, the eye, and the hand is the underlying principle of the various systems of manual training, to which the teaching of technics in dental colleges is analagous.

Operative technics is generally understood to apply to that part of the instruction which is obtained by operations upon teeth out of the mouth. As this practice exercises the mind and the eyes, and increases the dexterity of the hand, it must be allowed that its governing principles are the same as those of manual training.

That the dental student should become "handy" by doing some suitable hand work, is not only desirable but necessary. The best teachers recognize that the child gains a much better understanding by seeing and handling and doing, than by merely hearing and remembering. They recognize also that systematic training of the hands is not antagonistic to mental growth, but assists it.

There are two kinds of knowledge—what we know through our own experience, and what we know through the experience of others. What is *told* us is another's ; it rests on a different basis from that which we have gained by our own experience. Does the knowledge of the existence of the ant, or the bee, or the various winged creatures of the woods make an entomologist or a naturalist ? Is a man a machinist because he has *learned* the parts of the steam engine, and can define axle, lever, plane, and screw ? Should a man be called a *dentist* because he can name the teeth, bones, muscles and nerves, describe the making of amalgams, or detail the best method of filling a tooth ? *No*, not even if he can rehearse *all* his teacher has repeated to him. A purely mental acquirement is a theorem, and a theorem is a demonstrable proposition. Whether it may be proved is always a question until the act of *doing* solves the doubt.

In the progress of knowledge, practice ever precedes theory. That it is necessary for the dental student to possess more knowledge than can be gained from lectures and text-books, of the form, structure, and diseases of the teeth, of the properties of materials, and of the forms and uses of instruments as well as dexterity in handling them, before he be allowed to operate for patients, is now generally acknowledged.

Prof. G. V. Black, recognizing that the practical uses of any science or branch of knowledge are of higher importance than the purely intellectual, sounded a distinct note for advance, in a paper presented before the Chicago Odontological Society in June, 1888.

He proposed a course in operative technics, which, without limiting any part of the instruction in operative dentistry as usually given, would broaden and improve that teaching, which would, in fact, form the *basis* for didactic and clinical instruction. He says: "Students shall be taught the nature and physical qualities of the teeth upon which they are to operate, of the materials they are to use, and of the instruments by means of which they are to use them. This I would do in a series of object lessons, by having students handle teeth and study their forms and examine enamel and dentine by cutting them with instruments; manipulate the material used for fillings, study and practice the use of instruments, and learn the tests for perfect manipulation." This is the foundation of the courses in operative technics in the several colleges where that plan of teaching is in operation.

A course modeled on these outlines was instituted in the Chicago College of Dental Surgery for the session of 1888-9. The Dental College, Department of Medicine, of the University of Minnesota adopted a similar course the following year. Others followed, until at the present time about one-fourth of the colleges of the United States have systematic courses in operative technics. Besides the outlines already referred to, and the paper by Dr. D. M. Cattell before the World's Columbian Dental Congress, comparatively little has been written; nothing so far as the writer is aware which would serve as a text or reference book for teachers and students has been published. To meet this demand, so far as may be done in a magazine article, is the present object.

The difficulty of presenting any form which in its entirety could be adopted by all teachers, is appreciated, but an endeavor will be made to present a course which shall embrace the *principles* which underlie operative procedure. It is generally conceded that a familiarity with the organs to be operated upon should take precedence of all else; consequently dental anatomy will be given first place.

The existence of so good a text-book of dental anatomy as that of Prof. Black's removes the necessity of giving more than a few suggestions as to how it should be studied and the manner of presenting the subject to classes. Experience has shown that while text-books, models, charts, etc., are indispensable, these are not all that is necessary. The teacher must study each class, modify the course to suit their needs, and present it in short, terse explanations. The introduction of these explanations at intervals gives relief from the tedium of handling and cutting teeth and all other purely manual exercises, as well as carrying out the object of simultaneous development of the mind, the eyes and the hands.

The equipment of the technic laboratory with double curtains, a screen and stereopticon, ready at a moment's notice to present images of the teeth and their structure, has proved both useful and instructive. These pictures, produced by photography, are more accurate, and the method of presentation seems to interest the student and hold his attention better than charts or drawings do.

The syllabus presented does not include pathology or therapeutics to any greater extent than is necessary to elucidate the points where they modify or govern operative procedure.

The object is to fill the time allotted to this work with the *what* and the *how*, leaving much of the *why* for subsequent instruction.

OUTLINE OF THE COURSE BY DIVISIONS.

- I. Dental Anatomy.
    - Descriptive.
        - Terminology and nomenclature.
        - Notation.
        - Form.
        - Arrangement.
    - Structural.
        - Macroscopic.
        - Microscopic.
- II. Instruments.
    - Steel, its composition and properties.
    - Shaping, tempering and finishing.
    - Classification according to form and uses.
    - Action or use for each form.
- III. Canals.
    - Gaining entrance to canals.
    - Removal of pulps.
    - Cleansing and preparing canals.
    - Filling canals.
- IV. Cavities.
    - Classification from location and causes.
    - Preparation on principles governing.
- V. Pulp Treatment.
    - Conservative
        - Treatment and Protection.
        - Capping.
    - Radical.
        - Surgical devitalization.
        - Medicinal "
- VI. Filling materials.
    - Characteristics and composition.
    - Preparation.
    - Introduction into cavities.
    - Finishing fillings.

DESCRIPTIVE ANATOMY.—TERMINOLOGY AND NOMENCLATURE.

Recitations of first two chapters in Black's Dental Anatomy. Each student is furnished two brass rings about two inches in diameter; one bearing the teeth of one side, superior; the other the teeth on one side, inferior. Upon these teeth he will *locate* the different markings, as angle, apex, crown, root, pit, sulcus, groove etc.

Notation.—The following notation is one which furnishes the simplest form of expression for any given tooth. It was first introduced by Dr. Corydon Palmer. The use of the Roman numerals to designate the deciduous teeth was suggested by Dr. W. P. Dickinson.

DECIDUOUS TEETH.		PERMANENT TEETH.	
$\overbrace{\text{V IV}}\ \text{III}\ \underline{\overbrace{\text{II I}}}\,\vert$	$\vert\,\underline{\overbrace{\text{I II}}}\ \text{III}\ \overbrace{\text{IV V}}$	$\overbrace{8\,7\,6}\ \overbrace{5\,4}\ 3\ \underline{\overbrace{2\,1}}\,\vert$	$\vert\,\underline{\overbrace{1\,2}}\,\overbrace{3\,4}\,\overbrace{5\,6}\,\overbrace{7\,8}$
$\underbrace{\text{V IV}}\ \text{III}\ \overline{\underbrace{\text{II I}}}\,\vert$	$\vert\,\overline{\underbrace{\text{I II}}}\ \text{III}\ \underbrace{\text{IV V}}$	$\underbrace{8\,7\,6}\ \underbrace{5\,4}\ 3\ \overline{\underbrace{2\,1}}\,\vert$	$\vert\,\overline{\underbrace{1\,2}}\,\underbrace{3\,4}\,\underbrace{5\,6}\,\underbrace{7\,8}$

Examples.—Right superior central incisor, permanent, $\underline{1}\,\vert$

Left " first bicuspid, " $\vert\,\underline{4}$

Right inferior second molar, deciduous, $\overline{\text{V}}\,\vert$

The use of this system saves much time in labeling blocks or drawings and in making records. It will be used when convenient in this article.

Form.—Recitation upon each class of teeth.

Selection of one or more of each class.

Indicating upon these their chief markings.

Drawing or modeling each tooth.

First, recitation is heard upon the superior incisors. Following the recitation, the class make practical application of the information gained from the book, by selecting from a miscellaneous lot of teeth, one or more specimens of $\underline{1\,\vert\,1}$, and $\underline{2\,\vert\,2}$, pointing out and naming their crowns, roots, gingival line, surfaces, angles, grooves, ridges, and any departure from the normal.

As it seems to impress upon the student's mind the outline of the tooth, the sections for printing are cut while on the study of the form of that tooth.

Finally, drawings should be made of the labial, lingual, and mesial surfaces of $\underline{1}$ and $\underline{2}$; or what is better, model each tooth in clay. These last exercises must be from memory.

This plan of study is carried out upon all the teeth, deciduous and permanent.

Arrangement.—All the permanent teeth are now selected and arranged after nature, in a dummy articulator. (See Fig. 1.) This exercise demonstrates the students knowledge of arrangement.

STRUCTURAL ANATOMY.

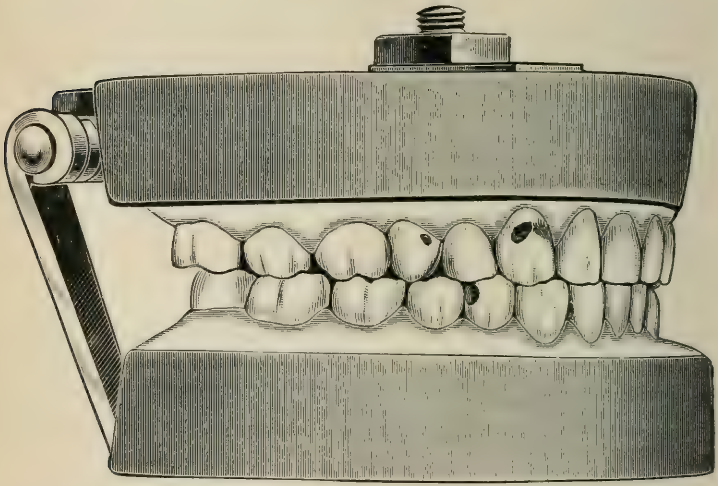
Macroscopic.—Cutting sections, longitudinal and transverse.

Printing silhouettes with these sections.

Studying form, location and size of pulp chamber and canals; form and thickness of enamel, and relative proportion of crown and root.

The importance and advantage of this work cannot easily be overestimated. It is the first direct contact that the student has with teeth. By cutting them he is taught the difference in the character of enamel and dentine. It gives training in the use of broaches. It fixes in his mind the forms of the teeth and the relative form, area, and location of their component parts. It teaches him the system of notation, and, best of all, it cultivates habits of neatness and order. At the same time it should not be extended until it becomes irksome, and it should not trench upon time required for equally important work. As the result of the author's experience, he has introduced several modifications in the work

FIG. 1.

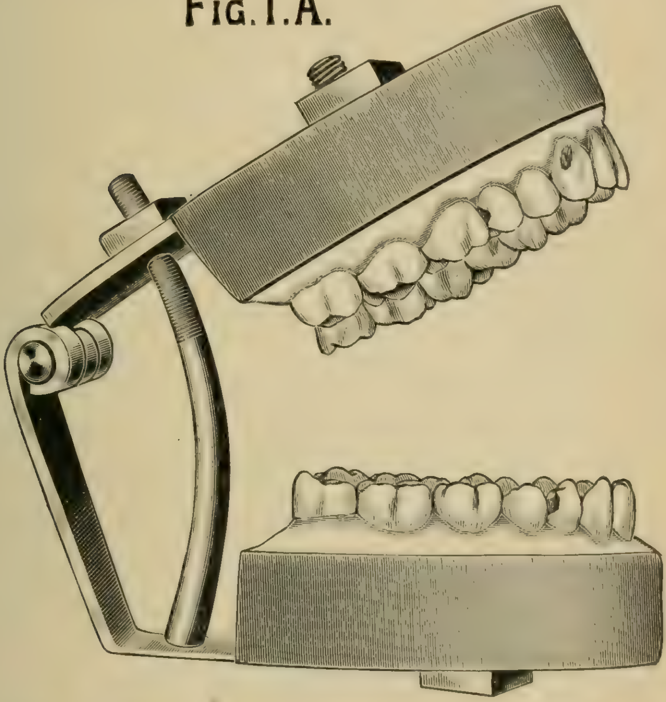


NOTE.—This dummy is made by bolting two brass forms to a strap hinge, which is bent so the joint comes above the line of occlusion. There is a bolt passing through it by means of which it may be prevented from opening wider than two or two and one-half inches, as in Fig. 1 A. The forms have a groove for the reception of the teeth. In arranging the teeth a thin layer of wax is placed in the bottom of the groove, which serves to hold the teeth in position until the proper arrangment is attained when they are finally invested in plaster. The teeth arranged for this exercise are the ones upon which the students perform the various operations comprised in the last four divisions of the course.

which he believes gives the student the greatest benefit in the shortest possible time.

The *teacher* should collect, examine and classify the teeth for this work; he should furnish the students with teeth and the blocks for mounting, and he should *retain the sections.* From his collection, students of each year will have opportunity to make a much better line of prints than if they were restricted to the cuttings of one winter. These sections are filed in trays, holding six blocks, which are incased in filing boxes holding twelve trays.

FIG. I. A.



Each student should cut a section of at least one aspect of every tooth, and make prints of every aspect of six teeth of each denomination, in the book provided, besides a duplicate sheet of each leaf for the teacher.

The *teacher* should cut on every section the relief line showing the enamel. This relief line gives several advantages: first, it shows the relative proportion of crown and root; second, it shows the form and thickness of enamel upon different parts of the crown, and, third, it shows the relative thickness of enamel upon the different teeth. It is cut with a minim wheel bur, which removes the stratum granulosum. The student needs for this work:

1 stick Am. Ex. sealing wax,
1 half round file, 8 inch, bastard cut, medium coarse,
1 bench vise,
1 alcohol lamp,
1 jeweler's hack saw, with 12 saw blades,
1 wax spatula.
1 excelsior ink pad.
1 rubber pad 3 in. x 6 in. x ¼ in.
1 book for printing, open at end. Leaves ruled as in Figs. 6 and 7.

Some fine canal explorers, some fine sandpaper, an old toothbrush and some cotton cloth. To insure uniformity, these materials should be selected by the teacher and supplied from the clerk's desk at the college.

The teacher should provide the teeth for cutting, and the blocks for mounting; also tablets of paper same texture, size and ruling as books; and some tablets of similar paper for experimental printing.

In marking the blocks bearing teeth which are to be cut longitudinally, the abbreviations, la-labial, b-buccal, li-lingual, m-mesial and d-distal, may be used. The $\frac{1\text{-}2\text{-}3}{1\text{-}2\text{-}3}$ being conical,are usually cut to the central axis. A tooth cut mesio-distally would show a la. or li. aspect, and one cut labio- lingually would show a m. or d. aspect; but to avoid confusion we will label all sections cut in the manner first mentioned la. and those mentioned second, m. If transverse sections are printed upon pages ruled as in Fig. 7, no marking is necessary further than the notation.

The blocks bearing *superior* teeth should have figure denoting *tooth* in *upper* left corner, and letter or abbreviation denoting aspect, in upper *right* corner. See Fig. 2.

Those for *inferior* teeth should have figure denoting tooth in *lower* left corner, and letter or abbreviation in lower *right* corner. See Fig. 3.

As mentioned before it is an advantage to cut the sections of each tooth immediately after reciting upon the *form* of that tooth. Directions for cutting of *one* will stand for all of the teeth.

Let each student select from a miscellaneous lot of teeth a superior central, every second student cuts la. aspect, the alternates cutting m. aspect. Fasten upon block with sealing wax, see Fig. 4 and Fig. 5. Fix block in vise; holding the file horizontally at an angle of 45° with long axis of tooth, cut rootward until pulp chamber is penetrated. Pass a fine explorer through this opening into the canal and through the apical foramen; the explorer may be left in canal and cutting resumed until the canal is exposed in its entire length, when it is removed and the surface of section made as nearly plane as the direction of the canal will permit.

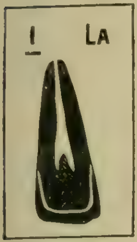


FIG. 2.

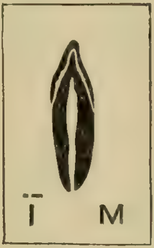
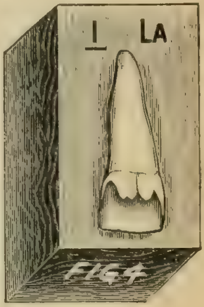
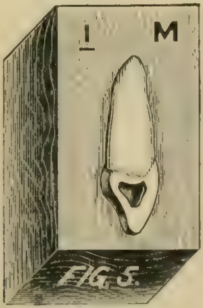


FIG. 3.





NOTE.—Blocks are 1¼x¾x¾ inches.

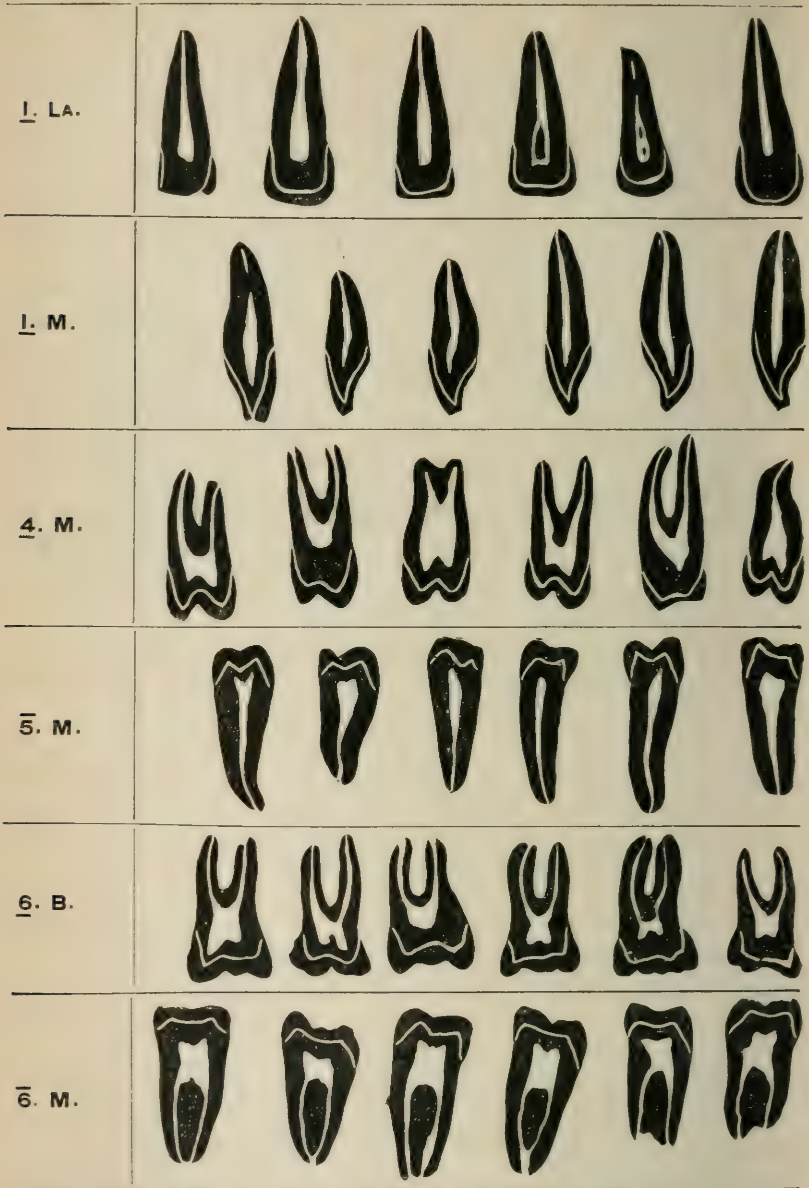
The section will then appear as in Fig. 2. When the teacher has accepted it and made the relief line it is ready for filing in the collection.

All the teeth must be mounted and cut as directed for *one*. Better prints result if the printing is done after the sections of *all* the teeth are cut. The printing is easy if care is taken to keep the surface of sections *clean*, if too much ink is not used, and if every part of the surface is held firmly in contact with the paper long enough for it to take the ink.

1893-4.
Bench No. 4.

FIG. 6.

GEORGE HANSON.



Note.—This page is ruled as the pages in the books are for longitudinal prints. The prints were taken from sheets furnished the teacher by five students in the Freshmen class for 1893-4, College of Dentistry, Department of Medicine, University of Minnesota.

In longitudinal sections of $\frac{1\text{-}2\text{-}3}{1\text{-}2\text{-}3}$ only la. and m. aspects need be shown, but in $\frac{4\text{-}5\text{-}6\text{-}7\text{-}8}{4\text{-}5\text{-}6\text{-}7\text{-}8}$ b. li. m. and d. aspects should be shown. See Fig. 6.

For transverse sections many teeth may be utilized which are useless for other work, as the principal point to be observed is at or near the gingival line. These sections cannot always be preserved, but each one of a group of six students may print from the other's cuttings.

The value of transverse sections is in showing the form of root canals, whether round or flattened. The pulp chambers, located in the crowns, are easily explored when once penetrated ; so it is less important that their outlines as seen in transverse sections be shown. Consequently we need not make sections, throughout its entire length, of more than one tooth of each denomination. These should be printed on one page ruled as in Fig. 7. Printed in this manner they show not only the outline of pulp chambers and canals with the outline of the tooth, but they show the increase in width of interdental spaces, from contact point to gingival line. In cutting transverse sections the cuts between gingival line and apex may be made with the saw. These sections may be preserved. For the supplementary prints let the students select teeth whose crowns have been lost by decay ; six of each denomination. Have them cut to print view of gingival line, Fig. 8. They may then be fixed on blocks and sawed, Fig. 9. The sections may then be mounted on blocks and annotated, Fig. 10.

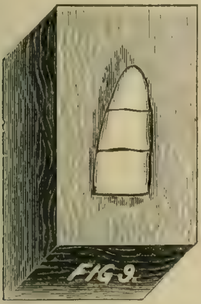
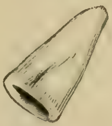


FIG. 9.

FIG. 8



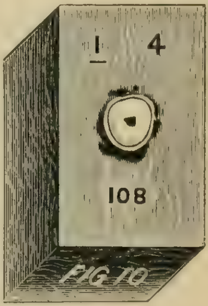


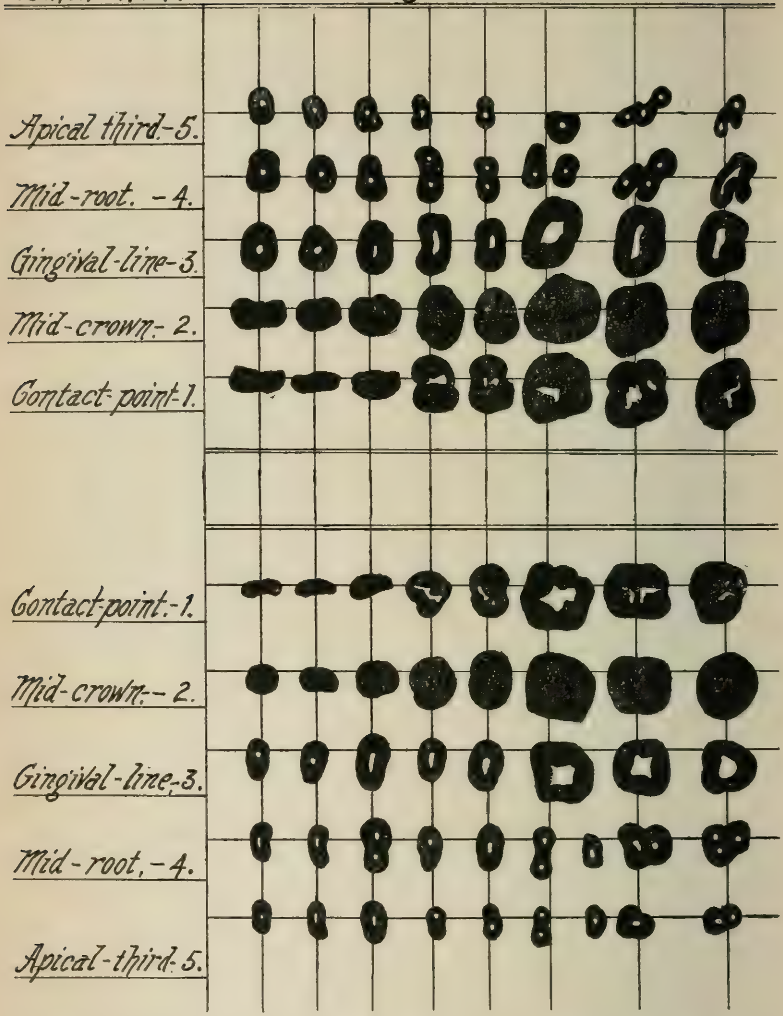
FIG. 10.

STUDYING FORM, ETC.

Recitations should be heard upon location and form of pulp chambers and canals, form and thickness of enamel and the

1893-4.
Bench No 4.

Fig 7.
George Hansom.



NOTE.—The prints on the page were made from transverse sections of all of the teeth of the left side. While not taken from the same mouth they were of uniform proportion and type. Prints made in this way are of much greater value if the teeth are so selected. Notice that prints Nos. 3, 4 and 5 are of more importance than Nos. 1 and 2.

relative proportion of crown and root as shown in the prints. The students' knowledge should be tested by requiring them to draw, from memory, outlines showing these several points.

STRUCTURAL ANATOMY.

Microscopic.—Cutting sections (dry). Making drawings.

Each student should cut one longitudinal and one transverse section ; the assignment of teeth should be such that sections of the several classes of the teeth would be made by the class as a whole. By studying the other's sections, each student will receive the same instruction upon all the teeth.

Each student should make a drawing of that which the microscope reveals of dentine, enamel and cementum. If teeth are cut and studied in the regular course on histology this part of the course may be confined to study and drawings of good photomicrographs thrown upon the screen.

[TO BE CONTINUED.]

BLEACHING TEETH.*

BY J. E. HINKINS, D. D. S., CHICAGO, ILL.

MR. PRESIDENT AND GENTLEMEN :—When I read my paper in December before this society, on bleeching teeth, I was exceedingly careful that I could demonstrate every statement by a chemical reaction, and that the laws governing all chemical equations would bear me out in these statements.

Dr. Harlan, in the DENTAL REVIEW of January 15, Vol. VIII., No. I, writes as follows : "If you use a saturated solution of tannin in glycerine, you do not have tannic acid. You have the *acidi tannici glycerita,* which is not capable of being broken up by the presence of iron in the blood ; therefore, that objection falls to the ground."

I have a saturated solution of tannin and glycerine ; also of ferric oxide, $Fe_2 O_3$; see whose statement falls to the ground.

The following quotations are from "Bloxam's Chemistry," page 311, paragraph 215 : "Iron is also found, though in small proportions in plants, and in larger quantity in the bodies of animals, especially in the blood, which contains about 0.5 per cent of iron in very intimate association with its coloring matter."

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*Read before the Chicago Dental Society, February, 1894.

Page 334, paragraph 223. "When iron nails are driven into a new oaken fence, a black streak will soon be observed descending from each nail, caused by the formation of tannate of iron (ink) by the action of the tannic acid in the wood upon the solution of carbonate of iron formed from the nails."

Page 532, paragraph 385. "Its (tannic acid) solution is astringent, feebly acid, and gives a bluish black precipitate with ferric chloride."

Page 533, paragraph 385. "Many other plants yield substances resembling this in astringency, in giving nearly black precipitates with ferric salts, and in forming insoluble compounds with gelatine, but differing slightly in some of their properties. Thus we have tannic acids from cinchona bark (quino-tannic acid), a yellow dye wood from a tree of the mulberry order (morus tinctoria). These give dark green precipitates with ferric salts, and when distilled, yield pyrocatechin, $C_6 H_4 (OH)_2$, instead of pyrogallol, $C_6 H_3 (OH)_3$. All the varieties are important from their applications in the tanning of skins, in dyeing, and in the manufacture of ink."

Watt's Chemical Dictionary, Morley & Muir, Vol. III., page 771. "Tannic acids, they have an astringent taste, give a blue, black, or a green coloration with ferric salts, and one of the most characteristic differences noticed was that some tannins gave a blue or blue black color reaction with ferric salts, whilst others gave a green coloration with the same reagent ; and this led to the division of tannins into two groups : 1, iron bluing ; 2, iron greening ; and this classification of tannins is still frequently made use of."

United States Dispensatory, Wood & Bache, p. 1017, etc. "The term tannin was originally applied to a principle, or principles, existing in many vegetables, having a very astringent taste, and the properties of producing a white flocculent precipitate with solution of gelatine, and a black precipitate with the salts of sesquioxide of iron, $Fe_2 O_3$. As obtained, however, from different plants, it was found to exhibit some difference of properties ; and chemists have recognized two kinds, one existing in oak bark, galls, etc., distinguished by producing a bluish black precipitate with the salts of sesquioxide of iron, $Fe_2 O_3$, and the other existing in Peruvian bark, catechu, etc., and characterized by producing a greenish black or dark olive precipitate with the same salts."

"With the salts of sesquioxide of iron Fe_2O_3 it forms a black precipitate, which is a compound of tannic acid and the sesquioxide, Fe_2O_3 and is the basis of ink. It does not disturb the solutions of the pure salts of protoxide of iron, $Fe\,O$."

"Iodine in a liquid containing tannic acid cannot be detected by starch; but if the liquid be placed in a watch glass, sulphate of iron added, and the glass covered with a starched paper, the tannin being precipitated by the iron, the blue color soon appears."

Now, for the bleaching. To bleach a tooth with any chloride is not a scientific operation. You destroy the structure of the tooth at the same time you bleach, and to that extent you have impaired the strength of the tooth.

Again Dr. Harlan says: "To whiten is not to bleach; to destroy chemically and make a new compound is to bleach. The trouble with nearly all the bleaching processes is that they whiten. That is what oxalic acid does. Afterward the color returns because it is not destroyed chemically."

When Dr. Harlan makes such statements he cannot prove them by chemical laws. It not only throws down oxalate of calcium, the most insoluble salt of calcium, but it forms the oxalate of iron, which is soluble and can be easily removed with ammonia. I shall quote a few standard chemical works and hear what they have to say about oxalate of calcium.

1st. Attfield. Page 311. "First analytical reaction, to solution of an oxalate add solution of calcium, a white precipitate falls."

2d. Oldberg and Long. Page 278. "Oxalates are of little importance except ammonium oxalate which throws down white calcium oxalate."

3d. Roscoe. Page 345. "Calcium oxalate is a very insoluble salt and is the form in which the metal is obtained for quantitative estimation."

4th. Vaughn. Page 18. "Calcium will be precipitated as an oxalate upon the addition of an ammonium oxalate."

5th. Elliott and Storer. Page 80. "The precipitation of white, finely divided oxalate of calcium, by all soluble calcium salts from solutions. Even the solution of sulphate of calcium gives this reaction with oxalates."

6th., Bloxam. Page 535, Paragraph 387. "The cellulose $C_2H_{10}O_5$, is thus oxidized, with evolution of hydrogen, and converted into oxalic acid, which remains in the mass as oxalates of potassium and sodium. These are dissolved in water, and boiled with lime, which produces the insoluble calcium oxalate."

"Oxalic acid is largely used in dyeing, calico printing, and bleaching, in cleaning brass, and in removing iron mould from linen."

Page 536, Paragraph 387. "Ammonium oxalate $(CO_2NH_4)_2$ Aq. occurs in Peruvian guano. It is used in analysis for the precipitation of calcium, and crystallizes in needles, from solution of oxalic acid neutralized with ammonia."

"Calcium oxalate, $(CO_2)_2$ Ca. Aq, is often found crystallized in plant cells. Some lichens growing on limestone contain half their weight in calcium oxalate. It is occasionally found in urine and in calculi. Calcium chloride is the best test for oxalic acid, giving a white precipitate insoluble in acetic acid. When heated $(CO_2)_2\,Ca = CO + CaCO_3$."

Watt's Chemical Dictionary, Morley and Muir, Vol. 3, Page 77. "Oxalic acid is used as a discharger in calico printing and dyeing, and for bleaching, whitening leather and for removing ink or iron stains from fabrics, marble, etc. It has great cleansing power for metal and even woodwork and forms a constituent for at least one of the recently introduced soap compositions for cleaning metals.

Detection and estimation. Solution of lime salts even of the sulphate give precipitates of calcium oxalate. Free oxalic acid is precipitated by limewater and calcium acetate, but it is better to render the solution alkaline by ammonia, and acidulate with acetic acid before testing.

Pure oxalic acid and *oxalates do not char when heated alone or with concentrated sulphuric acid.*" The same volume, page 78. "Calcium oxalate is precipitated as a powder containing one molecule of water by addition of a calcium salt to an oxalate."

Vol. 3, page 648. "Estimation by precipitation as calcium oxalate."

Richardson and Watts Chemistry, Vol. 3, page 128. "Neutral oxalate of ammonia $2(NH_4)C_2O_4$ is prepared by neutralizing oxalic acid with carbonate of ammonia and crystallizing. It is used in the laboratory for the detection and determination of lime." Page 130. "Estimation of oxalic acid. This acid may be determined by precipitating it from its solution by a soluble salt of lime, as oxalate of lime.

"Applications of oxalic acid and its salts.

"The chief consumption of oxalic acid is in print works where it is used as a discharger in certain styles of calico printing. It is also largely used in woollen dyeing and printing, and in silk dyeing. It is also employed in whitening leather and in cleaning boot tops. The salts above named are employed in bleaching straw in the manufacture of leghorn and other bonnets. A familiar application is in removing ink stains and iron moulds from linen."

United States Dispensatory. Wood & Bache, page 62. "The binoxalate and quadroxalate, both popularly called essential salt of lemons, are employed for removing iron moulds from linen, and act by their excess of acid, which forms a soluble salt with the sesquioxide of iron Fe_2O_3. constituting the stain. Oxalic acid is used for removing ink stains and iron moulds, for cleaning the leather of boot tops, and for discharging colors in calico printing.

"This acid has a very strong affinity for lime, and forms with it an insoluble precipitate consisting of oxalate of calcium, whenever the acid and earth are brought into contact in solution. It is even capable of decomposing fluoride of calcium, evolving hydrofluoric acid. (J. W. Slater.) Oxalic acid and its soluble combinations are the best tests for lime; and, conversely, a soluble salt of lime for oxalic acid. In weak solution the acid is said to absorb oxygen and to be converted into carbonic acid; but a strong solution is permanent. (*Am. Jour. of Pharm.*, July, 1870, p. 317.) When lime is searched for, oxalate of ammonium is the most convenient test. So strong is the mutual attraction between this acid and lime that the former takes the latter even from sulphuric acid. Hence the addition of a soluble oxalate disturbs the transparency of a solution of sulphate of calcium.

"Oxalic acid is distinguished from all other acids by the form of its crystals, and by its solution yielding a precipitate with lime-water, insoluble in an excess of the acid or of acetic acid.

"The proper antidote is chalk or magnesia, mixed with water; and as soon as either can be procured it must be administered in large and repeated doses. These substances act by neutralizing the poison, forming with it an insoluble oxalate of calcium or magnesium, both of which are inert. The soluble salts of oxalic acid, as oxalate of ammonium, and oxalate of potassium, are likewise poisonous, and the antidotes for them are the same as for the acid.

"The best tests for the detection of oxalic acid in the contents of the stomach, or in the vomited matter, in cases of suspected poisoning by this acid, are chloride of calcium, sulphate of copper, and nitrate of silver. The first causes a white precipitate of oxalate of calcium, known by its being soluble in nitric acid. When the antidotes have been freely used during life, the poison will be in the state of oxalate either of calcium or magnesium. In this case the oxalate found is to be boiled with a solution of carbonate of potassium, whereby an oxalate of potassium will be generated; and this must then be examined with the reagents above indicated."

BLEACHING TEETH, WITH REMARKS ON SOME CHEMICAL REACTIONS.*

By A. W. Harlan, M. D., D. D. S., Chicago, Ill.

I was somewhat startled at the February meeting of this society by the following challenge:

Dr. J. E. Hinkins said:

Mr. President and Gentlemen: When I read my paper in December before this society on bleaching teeth, I was exceedingly careful that I could demonstrate every statement by a chemical reaction, and that the laws governing all chemical equation would bear me out in these statements.

Dr. Harlan, in the Dental Review of January 15, Vol. viii., No. 1, writes as follows: "If you use a saturated solution of tannin in glycerine, you do not have tannic acid. You have the *acidi tannici glycerita*, which is not capable of being broken up by the presence of iron in the blood; therefore the objection falls to the ground."

I have here a saturated solution of tannin and glycerine; see whose statement falls to the ground (with a solution of ferric chloride).

Now for the bleaching. To bleach a tooth with any chloride is not a scientific operation. You destroy the structure of the tooth at the same time you bleach, and to that extent you have impaired the strength of the tooth.

Further Dr. Harlan says: "To whiten is not to bleach; to destroy chemically and make a new compound is to bleach. The trouble with nearly all the bleaching processes is that they whiten. That is what oxalic acid does. Afterward the color returns because it is not destroyed chemically."

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*Read before the Chicago Dental Society, March 6, 1894.

When Dr. Harlan makes such statements he cannot prove them by chemical laws. It not only throws down oxalate of calcium, the most insoluble salt of calcium, but it forms the oxalate of iron, which is soluble and can be easily removed with your ammonia. I shall quote a few standard chemical works and hear what they have to say about oxalate of calcium.

1. Attfield.—"First Analytical reaction. To solution of an oxalate add solution of calcium, a white precipitate falls."

2. Oldberg and Long.—"Oxalates are of little importance except ammonium oxalate which *throws down white calcium oxalate.*"

3. Roscoe.—"Calcium oxalate is a very insoluble salt and is the form in which the metal is obtained for quantitative estimation."

3. Vaughn.—"Calcium will be precipitated as an oxalate upon the addition af an ammonium oxalate."

5. Elliott and Storer.—"The precipitation of white finely divided oxalate of calcium, by all soluble calcium salts form solutions. Even the solution of sulphate of calcium gives this reaction with oxalates."

After recovering somewhat I concluded to publish the following reply:

In the attempt to bleach a tooth some difficulties are met with that seem to be not easily overcome. Most of the cases where an effort should be made to bleach are blackened in consequence of the death and disorganization of the dental pulp. To get rid of the discoloration we do not always need an agent to produce a chemical reaction. The composition of the dentine of a human tooth according to Von Bibra is as follows:

ANALYSIS OF DRIED DENTINE.

Organic matter	27.61
Fat	0.40
Phosphate and fluoride of calcium	66.72
Carbonate of calcium	3.36
Phosphate of magnesium	1:08
Other salts	0.83

To the above must be added about ten per cent of water by weight.

Berzelius and Lassaigne made similar analyses confirmed by Piggot. As age comes on there is less animal matter and more of the alkaline bodies. A person at twenty-five will have more organic matter in a tooth than one at forty. It is to be remembered that the dentine of a pulpless tooth is not in *solution.* As the animal matter and water in dentine comprises about one-third of its bulk we have to deal with something more than calcium or other salts. The infinitesimal quantity of calcium which is converted into calcium oxalate in the presence of a saturated solution of oxalic acid for a period of five minutes is not worth considering in a discourse on bleaching—superficial, interior cavity bleaching. Bleaching of this character is what has led to the abandonment of the oxalic acid process. The only general way an oxalate of calcium can be formed is as follows: "This acid has a very strong affinity for lime, and makes with it an insoluble precipitate, consisting of oxalate of calcium, *whenever the acid and earth are brought into contact in solution.*" "An aqueous solution forms with solution of lime a white precipitate, insoluble in an excess of oxalic or acetic acid, but dissolved by dilute hydrochloric acid." This quotation is taken from the fifteenth edition of the United States Dispensatory, page 91, H. C. Wood, Remington and Sadtler.

As the calcium of a tooth, to say nothing of the other ingredients, is *not* in solution we do not have the oxalate of calcium precipitated by this process. If iron is present we have the oxalate which is soluble, and it is easily gotten rid of by washing with alkaline washes or solutions.

The chemical composition of the human blood containing iron (oxyhemoglobin) is as follows: in 100 parts of ash we have:

Carbon	.54.00
Hydrogen	7.25
Nitrogen	16.25
Ferrum	0.42
Sulphur	0.63
Oxygen	21.45

"Iron in the blood is the pure oxide" invariably. *Reference Handbook of the Medical Sciences*, page 548, Volume I.

Tannic acid "does not disturb the solutions of the pure salts of ferrous oxide:" There is no ferric or ferrous chloride in the blood or in a tooth, hence the tannate of iron cannot be formed within it. The oxide of iron in the presence of a saturated solution of tannic acid in glycerine does not affect it in the slighest degree.

There are no chemical or theoretical objections to the use of tannin on the pulp of a tooth, either dissolved in water, glycerine, or when used in the powdered state. This much for tannic acid. To recur to bleaching for a moment I desire to say that the true theory of bleaching is to cleanse a tooth of grease or dirt, wash with a heated alkaline solution. Apply the bleaching agent, in dilute solution if chlorine is to be liberated, then moisten with dilute sulphuric, tartaric, or phosphoric acid for one or two minutes and wash the coloring matter from the cavity with a dilute alkaline solution. In this way the coloring matter has been rendered soluble and is easily gotten rid of. When the dentine of a tooth has been disintegrated there is no necessity for bleaching.

In the bleaching of a tooth we have to consider first, the conditions which brought about its discoloration. If the tooth has been filled with oxidizable metals, the tooth will be discolored by the oxidation of the metals, or the action of sulphur which may be found in the secretions of the mouth. It is a sulphide; it is well known to chemists how sulphides may be gotten rid of. In order to thoroughly bleach a tooth, it is necessary first to render the coloring matter soluble, so that it may subsequently be washed out by an alkaline solution which is introduced by the dentist himself. The chemical changing of the constituents of a tooth is superficial; it cannot go beyond the line of animal concretion, or the formation of the tooth itself, because the animal matter, the basis substance, or the glue yielding matter that holds the tooth together is a bar to the immediate further penetration of the chemical substance; hence all bleaching processes must depend on the solution of the coloring matter, and the subsequent washing out of this matter from the tooth, which will leave it in a condition similar to that which obtained before the death of the pulp. After the desiccation, or the nearly complete drying of the interior of the cavity, the introduction of some substance which will fill the interstices will prevent future discoloration, if such a substance be not contaminated with a vegetable or mineral acid.

DEFINITIONS OF BLEACHING.

Bleaching, dealbation, or subjecting to a process of whitening. Dunglison.

Bleach, to make white or whiter; by removing the original color. To bleach, to whiten. Webster.

Bleach. The destruction of the coloring matters attached to the bodies to be *bleached* is affected either by the action of the air and light, of chlorine or sulphurous acid. Ure.

Bleach. To make white or pale; to diminish the intensity of color: Gould.

See articles on bleaching in Encyclopedia Brittannica, Watt's Dictionary of Chemistry, Dictionary of Applied Chemistry, Bloxam, Witthaus, Simon, Roscoe and Schorlemmer, Fowne's Chemistry Revised, Cassidy, Mitchell *et id omne genus*.

ETIOLOGY AND PATHOLOGY OF INFLAMMATIONS OF THE MUCOUS MEMBRANE OF THE UPPER AIR PASSAGES.*

By HUGH BLAKE WILLIAMS, M. D., CHICAGO.

MR. PRESIDENT AND GENTLEMEN :—An article on this subject is, at best, a compilation, and the necessity of abbreviating my remarks sufficiently to allow this paper to be read and discussed in a single evening compels the omission of far more than is set down.

A cursory glance at the anatomy and physiology of the mucous membrane will do no harm.

Mucous membrane very much resembles the external integument, and serves the purpose, primarily, of protection to those cavities of the body which communicate with the external air. It is soft, moist and pliable, that it may suffer no injury; and that its integrity may be preserved it is provided with glands and blood vessels which maintain its characteristics.

It is divided into two layers : the epithelial and the corium or mucosa proper.

The first is composed of epithelial cells which are the simplest form of glands, and which take their names from the shapes into which they are crowded in nature's process of spreading them over the surface. The forms found in the mucous membrane of the upper air passages are two: the laminated pavement and the laminated ciliary. As these cells are continuously being lost by violence, and thrown off after having served their purpose, they are continually being reproduced by the usual methods of cell reproduction.

These cells or glands secrete a clear mucus which keeps the membrane healthily moist, and as the cells distributed on the surface of the membrane are not equal to the task of supplying all the fluid necessary for this purpose they are, in certain regions, rolled on themselves, so as to form the follicular glands, or convoluted and arranged in such positions that several cells pour their secretions into a common cavity which opens on the surface by a single orifice, thus forming the racemose glands.

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*Read before the Odontographic Society, March 12, 1894.

The second layer or mucosa proper contains unstriped muscular tissue, connective tissue, in which is found the connective tissue corpuscle or amœboid cells, nerves, a network of small blood vessels and the follicular and racemose glands which are sent down by the epithelial layer.

The submucous layer to which the membrane is attached is composed of loose connective tissue, lightly attached to the structure above to allow extreme pliability.

A prominent characteristic of mucous membranes is their permeability and this is the result of the character and arrangement of the epithelial cells.

The causes of inflammation of the mucous membrane under consideration may be classified under four heads.

1. Changes of temperature.

Under which climatic effects may be placed, as well as the exposure of the person to draughts, getting wet, sitting in damp clothing and sudden checking of perspiration.

2. Exposure to noxious gases and irritating vapors arising from certain chemicals, the decay of vegetable and animal matter, inhaling a vitiated atmosphere and air-borne mechanical irritants such as dust from city streets, the alkali of the western desert, particles of stone in quarries and from grinding stones and the pollen of certain plants.

3. Specific poisons.

Under this we may group tuberculosis, syphilis, the eruptive fevers, gonorrhœa, diphtheria, and those ill understood forms of inflammation which seem contagious and are probably the result of bacilli.

4. Constitutional diatheses.

Two forms of inflammation of the mucous membrane have been ascribed to constitutional diatheses. The first is the rheumatic sore throat observed by Dr. Ingalls; the other is hay fever, which Dr. S. S. Bishop believes to be dependent upon the uric acid diathesis.

Taking up these causes seriatim, we will first discuss the most common effect of a change of temperature. For want of a better name we call it "taking cold." This is entirely different from the absolute cold as is evidenced by the fact that comparatively few colds are contracted in extreme cold weather. The changeable weather of spring and fall is the prolific source of the material of the throat and nose specialist. Three factors are recognized as necessary to produce cold, viz., low temperature, air in motion and moisture. The exposure of a portion of the body, as getting the feet wet or sitting by an open window with uncovered head, is sufficient to produce disaster. The mechanism by which a cold is contracted is explained most plausibly by Bosworth in his recent work on Diseases of the Nose and Throat. According to his theory the inflammation results from the interference with the nutritive changes constantly going on in the body. Heat production is constant throughout the economy and to insure its proper continuance, a uniform temperature is maintained through the nervous system. Arrest this process in a part by lowering its temperature and the nervous system, sending out the same amount of forces as when all the conditions are normal, causes increased nutritive activity elsewhere.

Up to a certain point the process of inflammation is always the same, no matter where it occurs, and consists of:

1. Changes in the blood vessels and disturbance of circulation.
2. Alterations in the nutrition of affected tissues.
3. Exudation of liquor sanguinis and migration of white blood corpuscles.

The change in the blood vessels first appears in the arteries which become dilated. Later the veins are similarly affected. This is followed by a lengthening of the vessels and a resulting increase in their tortuosity. At first the blood current is accelerated, but it soon diminishes and becomes sluggish as the white blood corpuscles adhere with increased intensity to the vein walls and block the passage.

Soon the migratory power of the white blood corpuscles is manifested, and their passage through the vessel walls begins. At the same time the blood serum escapes through the coats of the vessels into the surrounding tissues. The alteration of nutrition is manifested by the enormously increased number of new cells produced. This is the framework of the imflammatory process.

Mucous membrane is subject to three varieties of inflammation, namely: Catarrhal, croupous, diphtheretic.

Simple catarrhal inflammation is characterized at first by a sense of stuffiness, dryness, heat and swelling of the affected part due to arrest of secretion and congestion. This is succeeded by the stage of effusion when the liquor sanguinis is poured out. At the same time the epithelial glands are stimulated by the increased supply of blood, and pour out an increased quantity of clear mucus, which, mixed with the exuded serum, gives the watery secretion of the second stage of a cold in the head. Cell production increases and often to such an extent that the epithelial cells are thrown off before they reach maturity. These cells, leucocytes and mucus corpuscles thicken the discharge and make the mucopurulent of the third stage of the inflammation. If the inflammatory process is sufficiently intense, the discharge ultimately becomes purulent, and the epithelial cells are thrown off in such numbers that the corium is laid bare in places by these so-called ulcers. If the process does not subside entirely, but a chronic condition results, the exudate remaining in the tissue is slowly organized into connective tissue and hypertrophy results. This hypertrophic tissue may so occlude the gland orifices as to produce abscesses and resulting ulcers, or it may so press upon the glands as to prevent their functioning and produce atrophy, or the lymphoid cells may be stimulated to unhealthy activity and produce adenoids. During an acute attack of catarrhal inflammation the special senses as that of smell in the nose, are lost for a time, but return with the subsidence of the symptoms.

Croupous inflammation is more intense than catarrhal and differs from it in that a pearl gray false membrane is formed as a result. The exuded liquor sanguinis contains more fibrin and albumen than that of the catarrhal form. The false membrane is organized from the fibrin, and contains numerous epithelial cells. It can usually be detached from its foundation without difficulty and leaves behind it a mucous membrane intact except as regards the epithelial layer. It may attack the follicles or be spread over the surface of the membrane. Why the inflammation takes this form has never been explained satisfactorily.

The diphtheretic inflammation starts as the two preceding ones do, but the false membrane it develops has the faculty of coagulating and killing the mucous membrane on which it rests. It is firmly attached to the mucous membrane, and its removal is attended with difficulty. It is of a dirty gray color, and is regarded as a local manifestation of a systemic infection.

One of these three forms of inflammation, modified by circumstances, is produced by any of the causes before enumerated acting on the mucous membrane. The eruption of smallpox, measles, and scarlet fever is found appearing on it, and in one variety of smallpox, a white croupous exudate occurs on the gums.

The inflammations syphilis produces are varied, but whether characterized by the formation of new tissues or the destruction of old, they are, when limited to the mucous membrane, only varieties of the catarrhal form.

Membranous croup furnishes the most common form of croupous inflammation. With diphtheria most of us are unhappily familiar, and it stands as the type of the third variety of inflammation of the mucous membrane.

I have avoided going into the details of any particular disease affecting the mucous membrane, and have preferred to class the affections due to bacilli and micrococci under the head of specific poisons, leaving details to be brought out in the discussion.

In conclusion, I desire to say that if there is anything of value to any of you in this article, thanks are due to standard publications from which I have taken it.

AMALGAMS. UNDER WHAT CONDITIONS MAY THEY BE SUCCESSFULLY USED?

BY P. J. KESTER, D. D. S., CHICAGO.

A consideration of the above subject is one that I undertake with great fear and trembling.

Amalgam itself has been so maligned, and has had more mean things said about it than any other filling material that has come before the dental profession.

And anything that I might say in favor of the use of amalgams is likely to be misconstrued.

If you will remember when copper amalgam was introduced to the profession, I repeatedly cautioned the dentist, and tried to

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*Read before the Odontographic Society, March 12, 1894.

warn him of the dangers of the indiscriminate use of it. And yet a gentleman of the Illinois State Dental Society greeted me with, "— you and your copper amalgam," as if I had inveigled him into its use. Of amalgams, I will simply *mention* two kinds, copper, and the alloys of silver and tin, leaving the selection of the particular kind, to the good judgment of yourselves.

While I believe that amalgams have a place in the operating case of the dentist, I do believe that there are other materials that are so much better that I presume it is safe to say I use less amalgam in my practice than the average dentist.

Ask Dr. McKellops, of St. Louis, the question as to when amalgams may be used successfully, and he would very likely answer with a strong emphatic *never*, as he does not use it at all. While on the other hand if the same query be put to Dr. J. Foster Flagg, of Philadelphia, he would tell you that as a tooth needed saving, amalgam was the very best material to use.

There you have the very extremes of opinion on the subject. While I do not agree with the first gentleman I am not sure but that he is as nearly in the right as the last.

What shall be the standard by which to measure the success of fillings? Shall it be the length of time a filling preserves a tooth? A gentleman several years ago compiled a list of gold fillings with reference to the time that they remained perfect and serviceable, and found that their average life was about three years. Judging by the time standard, and assuming the above conclusions to be correct, then I think we might safely use amalgam in selected cases, with a pretty certain hope of success.

Success in filling teeth is largely relative or comparative, and may not be judged by one standard, certainly not by that of time. While I do not agree with statements referred to above in regard to the life of the average gold filling, I am inclined to the belief that it is not as long as is usually supposed.

Many of us have seen amalgam plugs that have done noble service in teeth that were not thought worth filling with anything better, outlast the more aristocratic gold filling that apparently had all the advantages of position, structure, etc. Now if we could discover the conditions under which these fillings were put in we might feel justified in the expectation of a fair success in the use of the same material under like conditions.

But there are considerations other than the time a filling may preserve a tooth that move us in the selection of a material. Bearing in mind the assumption that success in dental work is only relative, we may then proceed to discuss the subject intelligently, for if we use the more positive idea of *success*, then we would simply waste our time, as there is no such thing as absolute success in the dental world. Of course, when we extract a tooth, we succeed in several directions; we succeed in removing the tooth, and we also succeed in depriving the patient of what ought to be a very necessary part of his organism, so that success may be defined in dentistry to mean, that operation which under all conditions will be of the greatest good to the patient. And as my subject is limited to the conditions under which amalgam fillings may be used successfully, I shall be obliged to confine myself to a consideration of some of them. And I may arrange them under three general heads:

1st. The financial condition of the patient.

2d. The physical condition of the patient, which may be further divided as to (*a*) age; (*b*) condition of the patient; (*c*) the condition of the tooth and location of the cavity.

3d. The preparation of the cavity.

THE FINANCIAL CONDITION OF THE PATIENT.

A consideration of the ability of a patient to pay a just fee for services rendered may seem out of place here, but I believe that it is one of the most potent conditions which render the use of amalgam expedient, at least, for there are many who can illy afford to have any kind of dental work done, simply because they do not feel financially able to pay for it.

Experience has taught us that amalgam does preserve the teeth, and that under the conditions suggested, the operation would succeed in preserving the teeth for the time being. Of course, I would not recommend its use in the six anterior teeth, excepting possibly the lingual pits of the incisors. I have removed amalgam plugs from the labial surfaces of the incisors which had preserved them for years, a condition which made it possible to replace them with gold; it is quite possible that in the case mentioned if the teeth had been allowed to remain without fillings of any kind they would have been lost. They were not filled originally with gold because the teeth were exceedingly sensitive and the patient young, and the parents thought they could not afford the higher priced material.

So I may say that for those who cannot afford to pay the required fee for gold, amalgams may be used with comparative success.

THE PHYSICAL CONDITION OF THE PATIENT.

a. Age. I think it is admitted that the use of gold and substances other than amalgam are comparatively difficult of manipulation in the mouths of young patients, and it is in these cases that we may succeed better with a certain kind of amalgam (copper) than with any other material. I use the term succeed advisedly, and mean by it that we will succeed in giving comfort to our patient and preserving the teeth until their removal (if temporary) or until such time as the patient will have arrived at an age when other and more permanent operations may be safely made.

b. The health of the patient. When the physical condition of the patient is such that it would be hazardous to undergo a long and tiresome sitting amalgam may be used, yet in my opinion other materials such as tin, or tin and gold, gutta-percha, etc., would serve the purpose better; but under those conditions when the secretions of the mouth are morbid and there is a rapid decay of the buccal surfaces of the teeth I believe copper amalgam is indicated.

c. The location of the cavity. The cavity may be considered first from a purely local standpoint. There are certain cavities, the location and character of which are familiar to us, that are found on the gingivo-buccal margin of the molars which on account of location and the peculiar condition of the fluids of the mouth, are among the most difficult ones to successfully fill with any material, as there is a tendency to recurrence of decay at this point. And in this class of cavities experience has taught me that copper amalgam, owing to its slightly antiseptic properties will preserve the tooth longer than any other material.

Where the cavities extend considerably underneath the gum margin, the use of amalgam at that point has been recommended, filling the cavity to the gum margin and then completing the operation with gold, either allowing the amalgam to become thoroughly hard before adding the gold or uniting the gold while the amalgam is still plastic, finishing the operation at one sitting. I mention this method, because gentlemen in whom I have the greatest confidence have recommended it, Dr. E. A. Royce having read a very interesting and instructive paper on this subject several years ago before the Chicago Dental Society. Here are a class of cavities that suggest the above operation and in those cases where I have made it, the results are quite satisfactory.

THE PREPARATION OF THE CAVITY.

The last, and by far the most important condition which is the greatest factor in the success or failure in the use of amalgam, is the preparation of the cavity itself. There is no material used by the dentist which requires for its successful manipulation the care in the preparation of the cavity as does amalgam, and I may say that there is no class of operation which has been so poorly done, with such good results. Much of the odium which has attached to amalgam is due largely to the fact that so little care has been exercised in its use.

It has been claimed, and with reason, that the indiscriminate use of amalgam has done much to lower the standard of operative dentistry.

The old adage that "A thing worth doing at all is worth doing well," applies to this, as well as any other work that we are called upon to do. If we would hope to use amalgam successfully we must exercise the same care in the preparation of our cavities as if we were going to use gold. This is much more difficult than would appear at first glance.

In the use of the latter material moisture must be excluded because gold absolutely refuses to cohere unless the cavity is kept dry. We must have strong walls, for our material requires the application of considerable force for its proper condensation.

We are also obliged to get a direct entrance into our cavity as we cannot work around a corner to advantage. We do not allow overhanging walls for the same reason.

But in the use of amalgam, the temptation is great to disregard our judgment and leave frail walls with deep undercuts, and frowning overhanging portions of the tooth that are a constant menace to the success of our operation. While perfectly solidified amalgam is hard, and will resist a considerable pressure if in a mass, in common with all crystalline substances it is very friable at thin or attenuated edges, so that to bevel the margins of a cavity is to invite disintegration at that point. There is no amalgam made (excepting copper) that can be as successfully manipulated in the presence of moisture as without it. It has been said that to properly finish a gold filling as much time is required as to insert it.

"It is a poor rule that won't work both ways." So we apply just as much time in rubbing up or down an amalgam filling as it has taken to put it in. How many of us insist on the return of our patients that we may properly polish and finish an amalgam filling? Very few, probably. How beautifully an amalgam plug may be finished! We have forgotten the fact that silver will take the highest polish of any of the metals, and there is enough of it in any of the amalgams (excepting copper) to remind us of it if we will but take the trouble to bring it out.

We all recognize the importance of properly smoothing off the margins of gold fillings, and it is infinitely more necessary to polish amalgam after it has become thoroughly hard. This is true because of the nature of the material. After having finished your filling while plastic, you will have left this feather edge extending over the margins of the cavity which will furnish lodgments for food, etc.

And the only sure way you have of knowing that your filling has not been disturbed while crystallizing, is to see it after the process is completed.

I feel that I have not done the subject justice, but if I have thrown out any suggestions that may lead to a more careful study of the conditions under which amalgam may be successfully used, I shall have accomplished the objects for which this paper was written.

While, as I said in the beginning, I am not a strong advocate of the use of amalgam, yet I do believe that much good has been done by its use, and I believe that much better results might be obtained if we did our work more carefully, selected our cases, and exercised the same care and order of intelligence that is done in our other work.

APPLICATIONS OF ALUMINUM.*

BY W. E. HARPER, D. D. S., CHICAGO, ILL.

MR PRESIDENT AND GENTLEMEN:—I desire to-night to call your attention to the applications of cast aluminum in dental prosthesis; and also to a successful method of working it.

In cast aluminum it is possible to meet more of the requirements for a perfect plate than with an any other material (continuous gum excepted).

It is more perfect in fit and adaptation.

It is stronger and more durable.

It does not oxidize in the mouth, and is not discolored by sulphides; there is absolutely no chemical action in the mouth, either from the saliva or the various foods, or solutions of salt or vinegar with which it may be brought in contact.

It will take and maintain a polish and finish as fine and smooth as gold; cleanliness is thus assured.

Essig gives to aluminum equal rank with silver as a conductor; and this, unquestionably, adds much to the superior comfort experienced with a cast aluminum plate.

The weight of the metal is a point which impresses the patient most favorably, though of little importance to us as dentists.

Pure aluminum cannot be worked successfully for cast plates for the following reasons:

The shrinkage is more than the soft tissues will accommodate. Also, in congealing, the metal crystallizes and leaves a surface which would take too much time to finish. (This latter is best appreciated by a close examination of the sample plates; one of which is pure aluminum, cast for the purpose of demonstrating its shrinkage and to show the rough surface due to crystallization.)

To measure the amount of shrinkage, I placed four German silver pins, two in the region of the cuspids, and the other two in the location of the second molars. Before closing the flask, I made a gauge to fit accurately between them; I also made one to fit between the pins across the heel of the plate. I now made the cast, and to get the amount of shrinkage, I found it necessary to make new gauges. This was done, and the difference in their length represented the shrinkage. This in pure aluminum was found to be $\frac{1}{40}$ of an inch in line with the arch; while across the heal it amounted to only $\frac{1}{80}$ of an inch.

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*Read before the Hayden Dental Society, February 19, 1894.

This experiment was also tried with the "Zeller" alloy, and the result was $\frac{1}{60}$ of an inch in line with the arch, and $\frac{1}{120}$ of an inch across the heel.

It has been found impossible (up to this time) to overcome this slight shrinkage, which is objectionable in some classes of work, such as casting to block teeth: while it is an advantage from another standpoint as it enables us to make a better fitting plate.

I quote the following from Essig's edition on metallurgy:—

"Plaster expands on setting. From the impression to the model two expansions are gone through before the fac-simile of the mouth in plaster is obtained; hence, a plate made to fit such a model perfectly must necessarily be somewhat larger than the mouth—a condition unfavorable to atmospheric adhesion; better results might be expected where the plate is somewhat smaller than the mouth, because such a condition would, in entire upper dentures, throw any undue pressure upon the alveolar ridge, while that portion of the plate covering the palatine arch would barely be in contact with the tissues; the pressure along the ridge would quickly promote absorption of the remains of the alveoli, and a uniform adaptation of the plate to the mouth would soon follow. On the contrary, if the plate be made to fit the plaster cast, and is a trifle larger than the mouth, the pressure will be thrown upon the palatine arch at the back edge of the plate at a region not likely to change by absorption, as is the case with the alveolar ridge and hence the margin of the plate will unbed itself in the tissues and cause much discomfort and impair the usefulness of the denture."

The slight shrinkage found in the "Zeller" alloy gives this result perfectly, and this has been proved by experience; one cannot fail to notice the superior suction af a cast plate after it has been worn a week or two.

This shrinkage has no effect whatever in casting to plain rubber and flat back teeth or facings, as in all my work I have failed to check even one plain tooth. By careful grinding of block teeth, sets may be cast without a check, nine times in ten. This is done by bending the pins away from the joint and then grinding them bevel (as much as the bent pins will allow.) The top of the block must also be ground the same way ; in waxing up, the blocks are separated enough to allow the insertion of a piece of ordinary writing paper. Every precaution must be taken in casting not to allow the metal to extend over the buccal or labial surfaces of the blocks; also, the rim of metal at the top of the block should be as narrow as possible, as the shrinkage is in proportion to the bulk of metal.

That a cast aluminum plate is the strongest made is indisputable. This is due to the rims which are cast on the buccal and labial margins of the plate, also on the inner side of the alveolar ridge.

These are cast with a deep undercut for the attachment of rubber, and effectually prevent any springing away of the rubber on the lingual surface, so often seen in swayed plates; they also give a strong edge of metal and rubber to finish to, leaving a smooth surface at the juncture of the two, totally devoid of a groove or line so disagreeable to the tongue. This is better shown in the sample plate made with rubber attachment, which I submit for your inspection.

We are often tempted to economize in constructing a gold plate because of the cost of material, whereas in aluminum the difference in cost between a strong and weak plate would amount to, say, two to five cents, and this, I think, would fail to tempt any of us.

I have heard and read that aluminum is acted upon chemically by solutions of common salt; this is an error, as it cannot be demonstrated either with pure aluminum or the "Zeller" alloy. I present for your closest inspection a plate which has been immersed in such a solution. The first experiment was made with a solution of one teaspoonful of salt in a pint of water; the plate was immersed in this for orty-eight hours without any action. I then took a tablespoonful to a pint of water and exposed it to this for seventy-two hours, but failed to find any change.

My next experiments were tried with acetic acid, such as is used for domestic purposes; I first tried a dilute solution, equal parts of acid and water, exposing the plate for about seventy-two hours, but without any change; I then tried the acid full strength, exposing the plate for the same period of time, and again failed to detect any chemical change.

Mitchell's Dental Chemistry states: "Aluminum is soluble in hydrochloric acid, and in aqueous solutions of alkaline hydrates; and resists cold acids, mineral and vegetable (except hydrochloric)." My own experiments confirm this statement, as I have tried dilute and concentrated, nitric and sulphuric acids, and no action was found. Hydrochloric acid is its true solvent.

In view of the authority quoted, my experiments, and the test of four years' wear in the mouth, I do not hesitate to warrant the metal to be free from chemical action of the saliva or any other influence to which it may be exposed in the mouth (except plastic amalgam).

Plastic amalgam cannot be worked in contact with cast aluminum, particularly in an alkaline medium, as the mercury combines with it superficially, and this in turn, when exposed to the air, takes up oxygen and forms alumina, which shows as a white excrescence on the surface, from which it appears to grow like a mushroom. This oxidation of the aluminum, in the presence of mercury, while the surface is moist or wet, cannot be detected; but if the plate or work be laid aside (after submitting it to the action of mercury) as soon as the surface is dried, oxidation will be noticed to take place very rapidly; and this excrescence, if dissolved in dilute hydrochloric acid, will answer to the tests for aluminum if ammonium hydrate is added.

Fillings of amalgam which have crystallized or hardened have no effect on aluminum work; and a cast plate or bridge may be placed in contact with it with perfect safety.

I now beg to present for your examination the different kinds of cast plates I make. In my practice, I prefer to cast to the teeth, leaving a groove on the buccal and labial surfaces for pink rubber gum; this I consider the strongest and best appearing plate, and gives an all metal surface in contact with the tongue. I have with me this evening two such plates, one of which is cast to pinless teeth, and without a check; however, I prefer the pin teeth, as there is less chance of breakage in use. This class of work is waxed up as shown in the model presented. You will notice the rim gives ample undercut for the rubber gum; also, that the necks of the teeth stand out free for the same purpose. The wax on the lingual surface of the teeth is made smooth and even, just as wanted in the finished plate. If by accident the patient should break a tooth, I would repair it about the same as with rubber; but, instead of making a dovetail on the palatal surface, would simply drill a hole in the location of the pins, making them a little larger at the bottom for retention of the rubber.

There is little for me to say in regard to the cast plate with rubber attachment, except that it is strong, durable, and will take a fine finish, on account of the strong metal base. I use all pink rubber for the attachment of teeth as the undercuts of the rims are deep enough to hold it secure, and I think the color adds to its appearance.

Where it is possible, I prefer to make an all metal denture, as per sample. This is strong and clean, and saves the time incidental to vulcanizing; such a plate may be made for a patient with a long upper lip, or in any case where the gums do not show.

In waxing up, the metal may be allowed to cover the lingual surface (in case plate teeth are used) and also allowed to extend over the neck on the buccal surface, as with rubber, if desired, there being no danger of a check.

It is important to separate the teeth about the thickness of ordinary writing paper at least, and that the wax be cleaned out between so as to permit the plaster to run in in flasking. The wax must be trimmed smooth and as desired in the finished plate around the necks of the teeth. If a surplus of wax is left, the metal will be cast and much time and labor would be required to trim and finish at these points.

My work in the line of block teeth has been expensive and unsatisfactory. I have cast six full sets of pin teeth, and one set of pinless. The cast was made without a check in all but one set of the pin teeth ; but in the subsequent filing and polishing of them, I succeeded in checking each of the other six, some in one, and others in two and three places, the checks always occurring in the gum. Even so slight a shrinkage on a substance so brittle and thin as the procelain gum can hardly result otherwise when we consider the fact that they are two nonelastic bodies, neither of which will give to accommodate the other. Allowing that the casting can be done without a check, the ease with which this can occur in finishing, or from a slight jar or tap in the mouth, makes it, in my mind, questionable work to offer a patient.

I have made a number of plates, using blocks for the six anterior teeth, as in many mouths the gum does not show posterior to the cuspid. This line has been much more satisfactory, and I feel will prove worthy of further investigation.

In bridge work my success has been extremely gratifying, and all I have made bids fair to prove its adaptability for this work. The cost of bridge work can be reduced to half that of gold, bringing it within the reach of the majority of our patients.

The case I present to-night is a duplicate of one I have made, and it is giving the greatest satisfaction in wear. It was made removable. The time taken to construct it (after preparing the roots) was five hours; this included waxing, articulating, casting, and finishing.

For this work I prefer plate teeth for the incisors and cuspids, and use short bicuspids and molars posteriorly; the object of this being to give sufficient metal for strength. You will notice the metal is cast to support the teeth against a crushing strain; this I prefer for two reasons: Teeth are less liable to break or check when they are supported (as in a plate) on the entire under surface than when the strain is all on the pins; again, the metal being next to the alveolar ridge is hidden from view, thus avoiding the exposure of metal as so often seen in gold work.

For posts I use German silver, as gold and platinum alloy with the aluminum are made extremely brittle, while the German silver posts are unaffected. Recognizing the slight shrinkage of the metal, I spread the posts, after taking the impression, about $\frac{1}{32}$ of an inch; this is necessary if the post fit the root canals (as they should in all bridge work). This being done the work can be set in place without any bending or cutting, and will fit more perfectly than such a piece of work in gold.

Dentilavus Detergens.—A New Preparation.

By E. L. Clifford, D. D. S., Chicago, Ill.

It would hardly seem necessary in this day and age to make any attempt to draw especial attention to the average condition of the human mouth, or to the importance of maintaining the same, as nearly as possible, in an aseptic condition. But every day experience prompts the conclusion that much must have been forgotten by both operators and patients, if it was ever learned.

It seems to have been forgotten (by some) that no portion of the human body furnishes conditions so favorable to the growth of microörganic life as the mouth. That its constant communication with the external atmosphere, its warmth and moisture, the great diversity of organic substances that pass through it, each leaving more or less debris about the teeth, and in other recesses of the buccal cavity, combine to afford not only a ready access to all forms of germs, but a comfortable habitation and a sufficiently diversified soil for a large variety of organisms to find abundant sustenance.

It seems to have been forgotten that "out of twenty-five distinct species of bacteria obtained from the mouth, isolated and experimented with, sufficient power was accredited to them to claim that seven would dissolve cooked albumen; five would swell it, or render it transparent; ten would dissolve fibrin; four would render it transparent or swell it; nine dissolve gluten; three transform starch, but only one acted with energy; seven coagulated milk; six would dissolve casein; nine transformed lactose into lactic acid; seven invert cane sugar; seven cause glucose to ferment and transform it partially into alcohol."

Now these varieties of organisms are found in healthy mouths, or in the mouths of persons in an undoubted state of health. In diseases of the mouth or throat this number is greatly increased according to the nature of the disease. Thus in diphtheria we find the micrococcus of that disease. In stomatitis, bacteria peculiar to it; erysipelas of the throat, ditto; etc., etc.

It seems to be quite generally believed that in health the organisms of the mouth are entirely harmless and that they continue to grow and multiply without our concern. This belief is unwarrantable, for not only do these germs continue to evolve noxious gases to taint the breath, or to convert harmless substances into poisonous compounds, but it has been sufficiently demonstrated that they are the active agents in the causation of dental caries. It is not necessary to recapitulate the theories with which the readers of the Review are certainly familiar, but this preface will be deemed sufficient to introduce a subject that has interested me for some years. That is, "What agents or preparations are best adapted to the wants of the dentist who will guard his patient against the above mentioned enemies to oral hygiene."

Of course, *special cases* require special treatment; each existing pathological lesion suggesting the appropriate remedy, and of these this paper is not intended to deal. But there is in every practice need for some preparation that will meet the requirements of the average conditions for daily use. Every progressive practitioner has no doubt his favorite preparation for this purpose, and has also no doubt spent some time, energy and money in his endeavors to combine some of our numerous agents in such a way as to produce a pleasing appearance and taste of the resulting preparation as well as sufficient power to act in the several directions indicated. I also have devoted some thought, and some time to this subject. I have felt that as a primary requisite the preparation must be nontoxic; also it must be pleasing to the eye and pleasant to the taste. It must be effective. I am aware that in the first two parts of these demands listerine has ranked high and is possibly to-day used or recommended by more dentists than any other preparation in the pharmacies. To the last requirement, however, I have some doubts. As a detergent agent, it answers well, but this is not all that the dentist requires in his efforts to furnish his patients with a mouth wash that will bring health and comfort. In addition to the detergent properties, astringent properties are essential in nearly or quite all cases, and in addition to these two properties there are many, many cases where anodyne properties become an absolute necessity, and for those remaining, where pain does not exist, these anodyne properties certainly do no harm.

For a long time I used a combination of listerine and hamamelis; the improvement was great, but the terrible odor and taste of the hamamelis was not at all governed by the listerine and I could only get my patients to use it when absolutely necessary. I have had so much confidence in the therapeutic value of the combination that I have spent considerable time in trying to produce a preparation that would contain all the good qualities of listerine and hamamelis and enhance if possible their antiseptic and astringent properties and to these add as powerful anodyne properties as was possible. To disguise the taste and odor and at the same time take advantage of their well-known antiseptic qualities my attention naturally turned to the essential oils, and for an increase of the healing properties to calendulæ. In trying to combine these substances however, I found much difficulty in making a clear and pleasant looking preparation owing to the difficulty of combining the waters and the solids with the oils. Messrs. Gale & Blocki, of Chicago, however, after many experiments finally succeeded in producing what I had failed to produce, and for the past year I have been using with much satisfaction the results of their labors. Not a few other dentists have also had their attention drawn to the preparation and judging from their reports are as much pleased with the results as myself. After additions and eliminations of first one article and then another the preparation as it is now prepared contains: benzo-boracic acid, thymol, saccharin; the oils of eucalyptus, caryophyllus, gaultheria, cassia and peppermint; the tinctures of calendulæ and anise, and hamamelis. They have given the preparation the name of "Dentilavus Detergens," and are now filling prescriptions for myself and others, and dispensing it under that name. From the information here furnished it will be apparent that all the essential qualities of listerine have been retained, with the addition of increased antiseptic powers, astringent and anodyne qualities. For my office use I get the 12 oz. bottle, which is the same size and price of listerine, and for prescriptions usually order the 4 oz. bottle, with instructions to use according to the directions on the bottle. I have found it useful in cases of pyorrhœa and other gingival disorders, aphthæ and other ulcerations, pericementitis, (especially when heated) the afterpains from extraction, and as an excellent mouth wash for those wearing bridges, crowns, or artificial dentures. Other uses for such a preparation will naturally suggest themselves to the observant dentist or physician.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

Regular meeting March 6, 1894, Dr. J. H. Woolley, First Vice President, in the chair.

Dr. A. W. Harlan read a paper entitled "Bleaching Teeth," and conducted a series of experiments.

Dr. J. E. Hinkins followed with a paper on the same subject.

Dr. J. N. Crouse was called upon to open the discussion. He said: I have bleached teeth for twenty-five or thirty years, and in so doing I have used chlorine, chloride of lime (Labarraque's solution), and perhaps the strength of the tooth may have been affected some, but not in a practical sense. I have bleached a great many teeth in my time that have stood twenty-five or more years without breaking, and have done so with chlorine. I do not pretend to say that this is the only agent that I have attempted to bleach teeth with, for it is not. I have bleached teeth with acids, but I do not like them as well as chlorine. I feared the results from the acids and therefore abandoned their use. The chlorine seems to be more practical.

I have not gone very deeply into the chemical part of bleaching teeth, as has been done by Drs. Harlan and Hinkins this evening. No matter what agents you use in bleaching a tooth, and no matter what material you fill it with afterward, if it is a young subject, you will have difficulty in making the tooth keep its color. This is especially true in the case of a young boy or girl where the pulp has died two or three years after the tooth has erupted. If some one will give us a practical solution of this difficulty, I think it will be of great benefit to us.

THE PRESIDENT: I would like to have the members speak with regard to the permanency of the operations in connection with bleaching teeth, and if any one has any light upon that subject I hope he will have something to say. It is a good point for our consideration, I therefore call upon Dr. Clifford to say a few words. This is an important subject and I hope it will be freely discussed.

DR. E. L. CLIFFORD: I do not remember of there ever having been a time within the history of our society when possibly there has been so much science thrown out in the same length of time as there has been this evening, and when one comes to move up against Dr. Harlan, when he has had a month to prepare himself, he has got to have a mighty big gun to shoot with, and he has got to have pretty big shot to fill his gun. It would not be interesting probably if I were competent, which I do not assume, to go into the chemical details that have been presented to us by Dr. Harlan, and the quotations that have been presented by Dr. Hinkins. I am reminded in this connection of an old gentleman who once said about the Bible that we have all denominations in the world, and every one of them base their faith upon the Bible, and they claim to be able to prove what they say by the Bible. And so it is very often in science. One author or searcher can quote certain abstracts from works upon science and he can absolutely prove that black is white. Of course, that is an extravagant statement, but he can at least prove diametrically opposite to what another searcher will prove by quoting certain other portions of the books.

It is a well-known fact that in all works upon chemistry and those which deal with the manufacture and use of chemical agents, that there are two sides to every question. The same agent is used sometimes to produce a diametrically opposite result, depending of course upon the conditions in which they are used. This point is not applicable to the subject that is under discussion just now.

The question is, have we gained anything practical from the ideas that have been thrown out by the profession in regard to bleaching teeth? As Dr. Harlan says himself, in reading from his own writings of the theories that he presented four or five years ago, he has changed his mind to a certain extent about some of the experiments here to-night. At the December meeting of the society, if I remember correctly, Dr. Harlan made the statement that there would be a difference in the results in the application of tannin to a tooth, where the application was aqueous, from what it would where it was a glyceride; in other words, that a blackening process might be got if the tannin was used in an aqueous solution. I want some information on that point. I want to know whether there is any condition or circumstance in which that difference would obtain in the bleaching of a tooth.

I have confined myself principally to the use of pyrozone since its introduction to the profession. It is such a new agent that we cannot speak authoritatively as to how long its action will last. We can only judge from the theory upon which its acts. It certainly does the work for us up to a certain point, but how permanent that work will be remains for the future to tell.

Dr. A. C. Hewett: I feel entirely incompetent to add anything to what has been said by either of the essayists to-night. That they both have ground for their beliefs, I have no question. The exhibition that Dr. Harlan has given to us, was to me extremely interesting. For the last four or five years I have followed practically his teaching with regard to bleaching and treatment of teeth, and the success that has attended my work in this direction has been so pleasing that I should dislike to change.

The President: Will you speak in regard to the permanency of the operation?

Dr. Hewett: I was going to speak of that. So far, I have not seen any retrogression following his method when two things were well done. The bleaching should be rapid, and immediately followed by a filling that is absolutely hermetical. The pulp canal should be also closed hermetically, and cotton fiber, no matter how unctuous the agent may be that is added to it, will not do that. Chloro-percha will not do it, and so far as I have been able to ascertain, oxychloride, or any of those cements that are commonly used will not hermetically and permanently seal the foramina of the roots. Something must be placed down in the root canal that shall make it perfectly hermetical, so that the serum or whatever otherwise might be drawn up into the root of a tooth and into the tubuli through the foramina cannot decompose. It is my opinion if the two ends of a tooth are absolutely sealed immediately after bleaching, there will not be a particle of change in color. I have extracted teeth, especially those of young people, following pulp treatment, where I have found in the roots of those teeth a mass of mucky-muck that was disgusting to the sight and equally so to the smell.

I believe, Mr. President, that is all I want to say. I do not consider myself capable of going into the chemical analysis of this subject offhand. I am much gratified to have listened to the able papers that have been presented, and it is only because I feel that I ought to pay a debt of gratitute to both of the essayists that I consented to rise and say what I have.

Dr. E. M. S. FERNANDEZ: I do not know why I should be called upon to speak on this subject. I am not considered an authority, but perhaps it is on account of what I said at the last meeting. What I said on that occasion I desire to repeat more emphatically to-night. I said that chemical experiments were deceptive. When I studied medicine the scientific men decided that the white corpuscles of the blood were the young corpuscles, and that as they grew older they changed into the red corpuscles, which was the true life of the blood. Now it is different. The white corpuscles are considered dead blood. Those men were as scientific at that time as the men are to-day. I am glad to belong to a society like this where we have two scientific men who have gotten up and showed their differences by demonstrations and experiments. I think we all ought to be proud of such a dental society as this, as we all know we do good work, and we learn a good deal at these meetings.

Returning to the point under discussion, I will say a few words about bleaching teeth. At the same time I will speak of a little instrument I have here, similar to one I have used for four or five years. It is a pair of tweezers, the points of which are made of platino-iridium. There is one instrument which does not belong to our dental case. It is a pair of steel tweezers.

I think a great deal of damage is done in the discoloration of teeth by using chemicals with iron about the teeth. Regarding the use of tannic acid in a tooth, I have found no trouble with it, and I have used it for over five years. I have not seen a single discolored tooth by its use. Of course, I have teeth discolored, but they were discolored before they came to me, and were blacker afterward. They were damaged by amalgam fillings, poorly put in, or by the cavities being extremely large, pulps dead, and medical treatment adopted by the patients, such as the use of different preparations of iron, and so forth. I think the trouble in such cases is very hard to overcome. Lately, when a tooth is discolored very badly, an incisor, for instance, and practically the tooth is ruined, I have adopted the system of cutting it off and putting on a well made porcelain crown. I believe there are times when it is a mistake to bleach a tooth that is entirely discolored, and it is really needless to do so when you can supply it with a good crown.

Dr. HARLAN: I do not see but what the quotations that have been made by Dr. Hinkins are nearly all in my favor. The point that we must consider is this: In order to form the oxalate of calcium we must have the calcium in solution. Is a tooth in solution? It is not. Then, that settles the whole question. With reference to the precipitation or change of the acidi tannici glycerita, if all the scientists that have ever lived in the world are mistaken, why then, of course, the ferric or ferrous chloride circulates in the veins of man. But it does not circulate in his veins; you cannot make it do so, and a man would not easily live if it did circulate to the extent of .43 of 1 per cent. Of course this may seem funny to some of you, but the question simply settles itself. You either have ferrous oxide in the blood or you do not have anything. You certainly do not have ferric oxide. Ferrous oxide has not the slightest effect on a saturated solution of tannic acid in glycerine.

Dr. J. G. REID: What is the trouble when it becomes exposed to the air?

Dr. HARLAN: There is no air in the veins or arteries of man except that which is taken through the lungs.

Dr. Reid: But when you apply it to the pulp of a tooth that has been destroyed, the blood in the pulp comes to the surface, and is exposed to the air. It becomes ferric oxide at that time, it does not matter whether it circulates in the blood or not. It has been changed by coming in contact with the air. That is the point Dr. Hinkins made, and that has to be settled.

Dr. Harlan: I do not know that that point has to be settled, for the reason that we can obtain ferrous, ferric and hydrated peroxide of iron outside of the body, and all three of them fail to change the tannic acid solution. You do not have ferric oxide in the blood.

Dr. Reid: I agree with you on that score. The point I make is this, and it is the one we want to have settled, that when the blood remains in the pulp of the tooth and becomes exposed to the air, the circulation is destroyed in it. Then you apply tannic acid to it. There is iron in the blood, and if exposed to the air, it becomes a a different material from what you have represented it. It is not the oxide of iron, it becomes another compound altogether by coming in contact with the air. That is the point I want straightened out clearly in my own mind.

Dr. Harlan: The question that Dr. Reid wishes to have settled is one which need not concern the society another month, for the simple reason it has already been answered. Ferrous, ferric, magnetic and hydrated peroxide of iron do not affect tannic acid solutions, and all of the conditions he speaks of have been covered by those four. It is not necessary to multiply experiments, for the reason that I went over all of them before October, 1890, when the question came up which is now under discussion. The question was this: What effect does a tannic acid preparation have upon a red blood disc? That was the point I wanted settled, and the question I then settled was that if tannic acid was applied to a red blood disc it prevented disruption of the disc. Secondly, if afterward we had disruption of the disc, we would simply have nothing but the oxide of iron, and the oxide of iron would not produce discoloration of a tooth. I was particular about that, because it was one of my prize papers, and a good many of the conclusions in that paper have been incorporated in text books. We are all making history. We are making it to-night, although you may not know it. The simple question resolves itself into something of this sort from a practical standpoint: What good does it do you to hear Dr. Hinkins and myself discuss this question? If it does not do you any practical good you do not get any benefit from it. I say the practical good you get from it is this, that after you destroy the pulp of a tooth with arsenic, and you desire subsequently to remove the pulp whole, you first puncture the pulp, secondly you apply peroxide of hydrogen or pyrozone (which is simply peroxide of hydrogen under another name), then you dry the cavity and apply a saturated solution of tannic acid in glycerine to fix the coloring matter and prevent its dispersion through the tooth.

A dyalizer produces a form of iron which does not have such marked acid constituents, consequently it is easy to exhibit dyalized iron. Physicians would not have use for it if it did not have any place in the internal economy, and so the ferrum dyalisatum does not affect a tooth like the tinctura ferri chloridi. One gentleman has gone to work and taken a tincture of chloride of iron and combined it into a syrup, so that it will not affect a tooth. The small quantity of iron in that will change the tannic acid. If you have used dyalized iron in a tooth you need not be afraid of its discoloring the tooth; you need not be afraid of making the tannate of iron, because in a short time it is incapable of doing it. After you have left the preparation in the tooth eight, ten, twelve or any number of days under thirty, you remove the dressing, and you can take the pulp of the tooth out in its entirety, if it has not been partially disintegrated before the arsenical application was made. That kind of tooth you do not want to bleach, because you have not discolored it. You cannot discolor it in that way. I simply take exception to Dr. Hinkins' conclusions. I simply say he cannot make oxalate of calcium in the way he says he can. He cannot prove it. It is utterly impossible. He assumes that he can, but he cannot do it. I simply want to show that his conclusions are wrong. I have tried it on more than one hundred teeth, and I have tried the ammonium process of getting ammonium oxalate, I find that we simply get the faintest trace. That is all. It does not produce oxalate of calcium. The idea that Dr. Hinkins sought to convey was this, that the whole of the calcium of a tooth was converted into oxalate of calcium, which was an insoluble precipitate. Is not that so?

Dr. Hinkins: Yes, to a certain extent. The point I wish to make is this, that the organic matter in the tubuli of a tooth, the iron, or whatever it may be, is made soluble in an oxalic acid solution, at the same time producing the oxalate of calcium which is insoluble. The substance of the tooth is not harmed at all. It produces an insoluble coating of the calcium salts and leaves the contents of the tubuli exposed to the action of the oxalic acid which does the bleaching.

Dr. HARLAN: If a tooth is deprived of its organic matter, it collapses. If you deprive it of its organic matter, what is there to hold it together? Absolutely nothing.

I am very glad to say for the benefit of the society that this is one of the subjects I have spent considerable time on. I do not care much about filling teeth with cohesive or noncohesive gold; but when it comes to the treatment of conditions concerning the cementum of a tooth, or to the sterilization of dentine, or to the filling of the roots of teeth, or to the bleaching of teeth, disease of the antrum, or anything referring to any possible catastrophe that may happen to the alveolar process, then I am deeply interested. I did not come here to split hairs; I came here to simply prove to you

1. That there was only oxide of iron in the blood.

2. That oxide of iron had no effect on tannic acid, either in solution, in water, alcohol, glycerine, or other substance.

3. That you could use tannic acid in a tooth *ad libitum*, just as freely as you wish, without the slightest trouble.

4. That in bleaching a tooth you must first render the coloring matter soluble, and afterward you can wash that out.

5. That with oxalic acid there is no oxalate of calcium except the superficial coating of the interior of the cavity.

6. That if you destroy the organic matter of a tooth, the tooth collapses, as well as the oxalic acid process of bleaching.

Dr. HINKINS: It seems to me that Dr. Harlan has taken my side of the question. I was well aware when I read the paper at the last meeting, that the oxalic acid formed an insoluble coating, the oxalate of calcium, and that is the reason why I advocate it. I was aware at the time that the iron, or whatever it may be, in the dentinal tubuli was made soluble in the acid solution. You can remove it with ammonia.

I had been working on that paper and similar experiments for six or seven years, and I believe yet that I am right. The point that I thought I made clear, and which was brought out by Dr. Reid, has not been answered by Dr. Harlan.

Dr. HARLAN: Did I not say that ferrous, ferric, magnetic, and hydrated peroxide of iron did not have any effect on a tannic acid preparation?

Dr. HINKINS: Yes, but my experiments show the contrary. The blood in the circulation is supposed to contain ferrous oxide or protoxide of iron, $Fe O$. But the blood in a dead tooth having been exposed to the air and other impurities is converted into ferric oxide or sesquioxide of iron, $Fe_2 O_3$, and this is acted on by tannin, forming tannate of iron.

At the close of the discussion, Dr. Ottofy made a motion that the chair appoint a committee, consisting of Drs. Harlan, Clifford, Hinkins, and Reid, with authority to select either another dentist, or a chemist, to aid them in following out the experiments so as to arrive at a better conclusion. He was confident that there were errors made in the experiments by both of the essayists; that they were unreliable. The motion was seconded and carried.

SECOND ANNUAL CLINIC OF THE ST. LOUIS DENTAL SOCIETY.

[REPORTED FOR THE DENTAL REVIEW BY DR. JOHN G. HARPER.]

The Second Annual Clinic of the St. Louis Dental Society was held in the Missouri Dental College on March 20, 21 and 22.

A large number of dentists assembled the first morning and spent most of the forenoon in hand shaking, making new acquaintances and renewing old ones. Dr. J. B. Newby, President of the society, gave a hearty welcome to the visiting dentists. Dr. H. J. McKellops, Supervisor of Clinics, announced the hours of the clinics, which were adhered to as closely as circumstances would permit. The following clinics were given during the three days:

Dr. W. N. Morrison, St. Louis, Bridge work—Gold and Rubber, and Planting Teeth.

Dr. L. A. Young, St. Louis, Gold Filling—Mesio-Incisal Cavity—Central Incisor.

Dr. P. H. Eisloeffel, St. Louis, Pulp Expulsion and Immediate Root Filling—Also explained his Method of Finishing a Gold Filling between crowded Teeth without previous Wedging.

Dr. J. H. Kennerly, St. Louis, Making Seamless Gold and Aluminum Crowns.

Dr. H. M. Baird, St. Louis, Gold Crown—Molar.

Dr. C. J. Tibbets, Quincy, Ill., Making Spring Tempered Hair Broaches.

Dr. I. A. Bass, St. Louis, Contour Gold Filling—Central and Lateral.

Dr. H. H. Keith, St Louis, Continuous Gum Work.

Dr. T. L. Pepperling, St. Louis, Gold Filling—Superior Seccond Bicuspid—Distal Cavity, finishing surface with Williams' Gold and Platinum.

Dr. John G. Harper, St. Louis, Taking Impressions with Modeling Compound.

Dr. J. B. Vernon, St. Louis, Bridge—Six Anterior Teeth.

Dr. A. J. Prosser, St Louis, presented Crown and Bridge work in the Mouth—Also approximal Gold Fillings, showing Swaged Matrix.

Dr. J. E. Grosheider, St. Louis, Porcelain Faced Crown—Incisor or Biscuspid.

Dr. J. H. Spalding, St. Louis, Gold Filling—Crown Cavity—Inferior Lower Molar—Hard Cylinders.

Dr. J. McMillen, Kansas City, Mo., Logan Crown—Foil Joint.

Dr. T. L. Pepperling, St. Louis, Demonstrating use of Physicks Forceps.

Dr. Geo. Bronson, St. Louis, Exhibited new Dental Instruments.

Dr. S. B. Prerost, Kansas City, Mo., Original Method of Adjusting Logan Crown.

Dr. J. W. Heckler, Kansas City, Mo., Showed his Method of Protecting Porcelain Facings by Tipping. Bicuspids and Molars.

Dr. A. J. McDonald, Kansas City, Mo., Gold Filling, Incisor.

Dr. K. B. Davis, Springfield, Ill., Gold Filling—Using William's Crystalloid Gold and Haynes' Pneumatic Mallet.

Dr. A. W. Harlan, Chicago, Ills., Therapeutics of Water—Paper, 4 P. M. in Large Lecture Room.

Dr. John G. Harper, St. Louis, Gold Filling. Rowan's Extra Pliable Rolls.

Dr. C. J. Tibbets, Quincy, Ill., Excising Teeth—Living or Dead Pulps.

Dr. J. G. Pfaff, St. Louis, Contour Gold Filling—Harris Engine Mallet.

Dr. Levitt E. Custer, Dayton, Ohio, Demonstrated Method of Fusing Platinum and Annealing Gold by Electricity. *Ohio Journal*, January, 1894, Pages 12 and 50.

Dr. H. R. Neeper, Hannibal, Mo., Combination Filling—Cement and Gutta-percha.

Dr. A. H. Peck, Chicago, Exhibited Acute, Obtuse Right Angle Attachment for Hand Piece.

Dr. W. H. Taggart, Chicago, Exhibited Bridge Work and Demonstrated Construction of Same.

Dr. W. M. Carter, Sedalia, Mo., Gold Filling—Immediate Separating.

Dr. Martin R. Windehorst, St. Louis, Gold Filling, Finishing with Gold and Platinum.

Dr. P. H. Morrison, St. Louis, Retaining Pit Filling of Platinum Gold in Mechanical or Chemical Abrasion.

Dr. G. A. McMillan, Alton, Ill., Porcelain Inlay.

Dr. J. Campbell, Bloomington, Ill., Gold Filling, Pneumatic Plugger.

Dr. L. B. Torrence, Chester, Ill., Contour Gold Filling—using Bonwill Engine Mallet and Cohesive Foil.

Dr. D. J. McMillan, Kansas City, Mo., Noncohesive Gold Filling.

Dr. J. G. Harper, St. Louis, Demonstrating use of Physicks Forceps.

Dr. C. J. Tibbets, Quincy, Ill., Immediate Treatment and Filling of Pulp Canals.

Dr. F. F. Fletcher, St. Louis, Gold Fillings—using Pneumatic Mallet.

Dr. C. E. Esterly, Lawrence, Kas., Showed Method of taking Measures for Bands and Constructing same for Downie Crown.

Dr. A. Peck, Minneapolis, Minn., Exhibited a number of Instruments and Appliances.

The clinics were well attended there being registered over one hundred and seventy. Wednesday evening a banquet was given at Faust's. Toasts were responded to by Drs. Newby, Harlan, McKellops, Hunt, James, Patrick, Morrison, Fuller, Miles, Bowman, Prevost, and others.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

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ASSOCIATE EDITORS:

T. L. GILMER, M. D., D. D. S. GEO. J. DENNIS, M. D., D. D. S.

THE DENTAL DEGREE.

There seems to be a tendency in some quarters looking toward a change in the name of the dental degree. These are some of the questions which naturally arise concerning the subject. First—What is the object of the change? And, will the profession be benefited by a change? There has been some discussion as to whether "Doctor of Dental Surgery," represented by the letters "D. D. S.," correctly describes what dentistry is. It is said by some that there is not enough of surgery, as practiced by the dentist generally, to permit the word surgery to enter into the name.

Others claim, and we are of this opinion, that scarcely an operation can be performed in the mouth without involving some principle of surgery. The intelligent dentist does more surgery every day than any general practitioner of equal practice in a month. Besides the ordinary operations on the teeth and gums, there are the treatment of fractures of the maxillary bones, the surgical operation for the removal of necrosed and careous bone, the section and exsection of nerves for the cure of neuralgia, the surgical treatment for affections of the maxillary sinus, etc., etc. Certainly if these were all, they would justify the use of the word surgery.

If there should be a change it should be in the word "Dental," as this word makes the meaning apply too specifically to the teeth. In its place "Oral" would better answer the requirements, as it would include not only the teeth, but all operations upon the teeth and adjacent tissues. Degrees now in use other than that represented by D. D. S., and those proposed to be adopted, are not more expressive or more clearly indicative of the dentist's field of operation, nor are they so euphonious.

They do not mean to intelligent members of the profession that persons possessing them are better equipped, than those havthe older degree. In the State of Illinois, for the small sum of two dollars, any one may buy a permit from the Secretary of State, to organize a school of dentistry. It is not at all essential that he should know the difference between the orbicularis oris muscle and the rubber dam. Such a school has a right to confer any degree it pleases, whether it be represented by D. D. S., D. M. D., M. D. S., or what not.

We venture the assertion without being invidiously disposed, that those reputable colleges granting other than the D. D S. degree, do not graduate a greater per cent of intelligent practitioners than those conferring the old degree. Should they confer the D. D. S. degree, their students would take just as high a position in this country or in the world, for that, as with their present degrees.

Dentistry is the youngest of the professions, but it begins to assume proportions which indicate its adult life. Doctor of Dental Surgery is, perhaps, not a perfect name, but it has, from the time of its adoption, met with but little serious opposition from the profession at large. It is generally accepted as the American degree.

It is beginning to be understood by the laity as the distinctive title of dentists, as are the degrees, Doctor of Medicine, Doctor of Law, or Doctor of Divinity, of the professions to which they belong. Dentists should earnestly express themselves in favor of the old D. D. S., degree. No good can come from a change, or the multiplication of degrees, but infinite confusion must result.

T. L. G.

THE CODE OF ETHICS.

In this issue of the DENTAL REVIEW we publish the code of ethics of the American Dental Association. This is done in answer to a request made by members of dental societies who have never read the code.

It is somewhat of a revelation to discover on inquiry how many there are who have been admitted into societies claiming as their standard the code of ethics of the American Dental Association, without ever having read the code to which they are supposed to subscribe. It is probable that most members of societies have a general idea of the purport of the code, but no man should be taken into any society without first reading word for word just what the code says. Nor will it do any harm for long standing members of societies to occasionally review the code. We cannot have the spirit of ethics too strongly diffused in our midst, and while the mere reading of the code will not make an ethical dentist out of a man who by instinct is unethical, yet the high tenor of thought represented by the code cannot fall short of having an elevating effect on the man who is capable of elevation. It is safe to say that the member of a society who sits calmly down to review the code in a proper spirit will rise from the reading with a higher sense of his obligations to the profession.

It has been claimed that the code as it stands to-day is inefficient—that a strict interpretation of the letter of the code will permit a man to do many unethical things, and that in any event no code, however well framed, can control a man who wishes to avoid it. This may all be true, and yet it cannot be denied that the framing of the code of ethics of the American Dental Association has exerted a salutary effect on the profession, and has turned the balance on the right side in many instances when a man was wavering. It is especially helpful to the young practitioner; it teaches him good principles and good morals, and he is usually better for having subscribed to it. We do not believe it has outlived its usefulness yet, and we ask our readers who are not familiar with its text to examine it carefully. It is at least interesting in the illustration it affords of the high moral sentiments which actuated the men who framed it so many years ago.

DEATH FROM COCAINE.

In our March issue we took occasion to offer a word of caution against the indiscriminate use of drugs applied on, or injected into, the tissues for local anæsthesia. Especially did we warn dentists against using those drugs with which they were not familiar, and pointed out particularly cocaine as a drug whose action was so unreliable that dentists should exercise the utmost caution in its use. That our apprehension was well founded has been abundantly and distressingly proved by the following dispatch which we clip from a daily paper:

"GOSHEN, Ind., March 28.—Thomas H. Daily died suddenly in a dentist's operating chair this afternoon after an application of cocaine preparatory to the extraction of a tooth. He was cashier of the City National Bank and prominent in politics and the city's business interests."

It is true that this report, as is often the case with newspaper reports of the kind, is indefinite and unsatisfactory as a basis for scientific argument. It does not state in what quantity or in what manner, the cocaine was used. The details are very meager, but the plain statement is made—and that is what concerns us most in this connection—that a patient died in a dental chair from the use of cocaine preparatory to the extraction of a tooth. This case only emphasizes what we said in our previous article that no one should use cocaine for local anæsthesia without first studying carefully its manifestations and arming himself against accident. There are few drugs that lack uniformity of action to the extent that does cocaine. It is almost never twice alike in its effect, and no one can predict what its action in a given case will be. A recent experiment upon dogs has proved that in one case a certain dog would submit to a large amount of cocaine without apparently being affected at all, while the very next dog that was experimented on died before one-half of the quantity was given.

These things prove to us that we are dealing with a dangerous agent, and one that we do not well understand. It were better for our younger practitioners especially to experiment carefully on animals and study thereby its action and the means for resuscitation before they begin its use on their patients, and while this article is not written in the spirit of the alarmist who does not believe in progress yet we venture to make the assertion once again that this is one of those cases where it is best to "make haste slowly."

PYROZONE FOR BLEACHING TEETH.

We wish to add our testimony to that of others as to the efficacy of pyrozone as a bleaching agent in discolored teeth. We have never experimented with any agent which seemed so uniformly effective as this, and while it has not yet been long enough in use to judge of its permanency, the indications go to prove that we have in this drug a very important adjunct for this line of work.

It is used in the following manner: The 25 per cent solution is procured in the original tube. The small end of the tube is broken and the liquid poured into a glass stoppered bottle, which is then kept in a cool atmosphere. The tooth to be bleached is protected by the rubber dam and the root filled. Before attempting to bleach, a careful examination should be made as to the relative position of the last portion of root filling inserted and the gingival line. If the root filling extends crownwise of the gingival line, part of it should be removed so as to expose the entire neck of the tooth to the action of the bleaching agent. In those cases—and they are frequent—where the color is intensified near the gingival line, it is well to remove the root filling one-third the distance of the canal, and work the bleacher well up into it. The tissue of the tooth is thicker from the labial surface to the pulp canal at this point than at any other, and unless the agent has perfect play upon it the bleaching will be unsatisfactory near the neck of the tooth.

After the root is filled the cavity is dried with warm air. A few drops of pyrozone—about the quantity needed for the case in hand—is then poured from the bottle into a convenient glass receptacle, and the bottle immediately corked and returned to its cool place. A bit of cotton is wound loosely around an orange wood point and the pyrozone carried by this means to the cavity. After leaving the cavity flooded for five minutes a warm air blast is used to evaporate the pyrozone and the blast continued till the cavity is perfectly dried. This is followed by another application of the agent and the process repeated till the desired color is reached. In filling the remaining portion of the canal and lining the cavity, a light colored cement should be used instead of gutta-percha. The cavity should be perfectly filled at the same sitting. This method carried out in detail has given us most satisfactory results.

TECHNIC TEACHING IN COLLEGES.

Probably the greatest advance in college instruction in recent years has been the introduction of technics as a fundamental basis from which to start the student in his acquirement of knowledge and manipulation in the practical departments of his work. College instruction is not yet perfect but it is vastly nearer being perfect on account of this one thing. We do not believe that teachers in colleges where technics are not taught thoroughly and systematically can form the slightest idea of the benefits to be derived from this line of work. It directs the beginner into the proper channels at his very entrance into the college and gives him an intelligent basis to work upon throughout his whole college course, and in fact throughout his whole course in life. No man can fail being a better dentist as the result of this kind of instruction.

Since its originator, Dr. G. V. Black, first mapped out the work it has been extended in its scope till now it embraces a most complete system of manual and mental instruction that would astonish those unfamiliar with its possibilities. As an evidence of what is being done in this direction we wish to call attention to the series of articles begun in this issue of the DENTAL REVIEW by Dr. Thomas E. Weeks, of Minneapolis. These articles when completed will constitute the most systematic and exhaustive treatment of the subject that has ever been presented to the profession, and we predict that they will create no little interest among the profession generally, and among teachers particularly.

DR. W. D. MILLER'S APPOINTMENT.

The announcement is made that Dr. W. D. Miller, of Berlin, has been honored by the University of Berlin in the appointment as "Extraordinary Professor of Medicine." This is an honor never before bestowed upon a dentist in Germany, and those who are unfamiliar with German methods and German traditions in the matter of university appointments, can little realize the full import of this latest and greatest distinction that has been extended to Professor Miller. American dentists may find in this appointment two reasons for congratulation, first because the recipient is an American, second because he is a dentist. A still greater reason than either of these lies in the fact that the honor is justly deserved.

DOMESTIC CORRESPONDENCE.

A CARD.

To the Dentists of Illinois: CHICAGO, March 30, 1894.

I receive frequent inquiries relating to the business of the State Board of Dental Examiners. My name also appears as a member in the last published report, and to my surprise in connection with a list of questions for examination of applicants for license, which questions had not been submitted to me. I wish to announce that I have resigned from the Board over a year since, and my resignation was accepted by the Governor. For a time, however, I continued to act as a matter of courtesy, preceding the appointment of my successor. But since the beginning of this year I have positively refused to act on the Board and have no further official responsibility in connection therewith.

GARRETT NEWKIRK.

NEW YORK LETTER.

To the Editor of the Dental Review: NEW YORK, March, 1894.

March brings with it the thought of spring; spring means new life, and new life means progress. Are we progressing? This question is in the minds of thoughtful men. It is said that stagnation is settling down upon us, and we must move up on higher ground. We are looking for some discussion along this line. If we measure the editorial capacities of our journals rightly it cannot be long before some one of them will take up the thought of Prof. Truman, "Are our Societies satisfactory?" One society is satisfied with itself this month—that is the First District.

Their clinic was simply immense; over 500 present. For the first time they held the clinic in a public hall. Our first impression on going into the hall was that we were entering a large fair or exhibit. Tables were arranged about the room for each exhibitor, and the hum of interest manifested the hearty enthusiasm. Any one who thinks the interest in such gatherings has died out would be likely to change his opinion on seeing this demonstration. We are convinced that such meetings should be held in New York at least three times each year. Such a commodious hall as was used at this time could be used for larger purposes, namely all enterprising trades in any line which pertains to our interest could be wisely introduced for exhibit also, and they would gladly contribute toward the expense by paying for allotment of space. In this way no rivalry could be introduced that would in any way mar the display. An exhibit such as could be secured at these times would add greatly to the occasion. It would offer an opportunity for showing new things, and we believe it would attract attention throughout the country; and the attendance would be very large. Even if this could be carried out once or twice we think it would be a success and give the society in charge a big boom in attendance. New York has attractions that no other city has and hundreds of dentists would ultimately make an effort to come.

W. W. W. got off a very bright remark at the union meeting in Brooklyn last month; we give him credit for it. W. W. W. knows a good thing when he sees it. He said that for years many men had been claiming that they could fill these tubules with gold and gutta-percha and etceteras, and he had never believed it, but now Dr. Kirk's paper did show how it could be done, and effectually, with carbolate of albumen. No one but a microscopist could discern such things. When he was studying morphology in Prof. Heitzmann's laboratory he got on to these facts; and so we are indebted to him for this knowledge. Men are going to be a little more chary about stating scientific impossibilities in the future, if W. W. W. is about. This applies to a class of men that have written exhaustive articles telling how they took impressions of apical foramina and fitted hermetical stoppers which precluded all possible failure. This statement of W. W. W. proves what has been so assiduously advocated—the value of science as applied to practice.

The essayist of the evening at the First District Society, R. C. Brewster, M. D., M. D. S., asked the question, "Had not tin in its value been overestimated?" Dr. Bogue said, with his usual astuteness, anything that is indestructible in the mouth can be so put into a cavity that by its adaptability can be made a savior of the tooth. *Quality of judgment and ability settles the whole question.* We think there is much wisdom in such talk. (The italics are ours.) Dr. Bonwill is a mark for admiration everywhere he appears. His products were the coveted of all at the clinics because of the fertility of invention exhibited. Think of an inventor effectually killing all his former brilliant inventions of the engine and mallet by reversing principles and making the second transcend the first. The only analysis we can give of this is, his mind transcends the comprehension of mortal. It is a divine gift. May the good angels sweetly and safely guide him to the end of his human career. He was invited to produce his views of *something new* in practice at the next meeting of the First District Society. No grass grows under his feet.

We have just received a letter from one of the islands of the sea which tells us of the anticipated congress at San Francisco, predicting that it will be superior to the World's Columbian Congress. It adds this: "If you want to have the best time you ever had, go." Well, we have always had a real desire to visit San Francisco. We like the "git" of the men in charge of this Pacific Congress. Eighty dollars there and back. Whew! Let us all go. We thought they took their defeat quietly in not securing the visit of the A. D. A. next year. They can cover themselves with glory by going energetically to work. (How our mouth waters to think of the grapes—and then they will not be sour, nor hang very high). Already we have heard of preparations for going in our neighborhood. We ought to be emphasizing our importance by these gatherings.

On to Rome, we see by the *Medical Record*, fully six thousand visitors expected. English dentists are going, you know. What we did not get from them at Chicago will be given out there.

We notice with pleasure that the March number of *Items of Interest* has a quotation from one of our letters, and gives due credit to the REVIEW, but we notice another quotation, word for word, among the editorials for which no credit to the REVIEW is given. This is on page 180 of the *Items*, commencing with the words, "Dr. W. S. Elliott," etc. Doubtless the dear doctor was so pleased with the truthfulness of our remarks he forgot the appropriateness of its occupying the editorial page. We do not want "Brother Patterson" to get hold of this, so we note it in time.

When our staunch patriarch, Dr. Benj. Lord, comes to the front in a dental meeting we can count on having some common sense remarks, particularly when he takes out of his pocket a little package of notes jotted down, as he did at the last meeting of the Odontological Society. Dr. Lord does not believe in everything he hears at our meetings, but what he does believe he verifies in his practice. This too many do not do. He believes in tin, always has, and always will. In his hands it is a success. Yet many of us think more of some things than he does—say the rubber dam, dental engines, etc. But stand by the doctor and see him handle soft foil (noncohesive) with flexible shank pluggers, and you will see a degree of hand control and finger craft that would make many men envious. He is sound on hand manipulation and thinks we have not emphasized it enough in these late times. He is right, and our schools are not faithful if they do not give more attention to it, and a good deal more culture in delicacy of touch. We are in danger of degenerating into mere mechanics. We are more and more impressed on this line, for it comes to us so often in complaint from patients who have been severely dealt with. Many operators neglect to guard themselves against overpressure with engine burs, producing severe pain caused by the heat generated. This is inexcusable. To do it is not in line with humanitarian dealing and intelligence.

In one of our late letters it seems that we have (not knowingly) taken credit from Dr. M. L. Rhein in connection with "Ideal Bridge Work.'' We had been shown the work by Dr. Andrews in his office some time during the last year as the work of his hands, and nothing was said to us of any other person's claim. As we were not present at the meeting at the hour the paper was read by Dr. Rhein, we did not hear the claim made by the essayist that he had a joint claim for invention. We only aim to be truthful, and hold ourselves open for correction.

QUID NUNC.

P. S. We find we have used the term carbolate of albumen instead of coagulate, in reference to Dr. Kirk's paper. We had doubtless the thought of the late Dr. Atkinson's views of the action of creosote and carbolic acid upon sensitive dentine and exposures of pulp tissue, forming an "indestructible pellicle," thus making a safe covering.

Q. N.

REVIEWS AND ABSTRACTS.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1893. B. H. Catching, D. D. S., Editor and Publisher, Atlanta, Ga.

We are quite willing to quote with our own endorsement the statement made in the announcement for the next year's Compendium. ''The Compendium has passed the experimental stage, and is now a reality and a necessity for every active, progressive, dentist, to enable him to keep fully abreast with the dental profession."

The present volume offers 298 pages of good, condensed practical matter, well edited and well printed. A new feature is the cosmopolitan character given the work by enlisting the services of such men as Dr. W. D. Miller, of Berlin, Dr. A. C. H[illegible]genschmidt, of Paris, and Dr. Wm. Dunn, of Florence, to edit and translate the best material appearing in their respective countries.

This plan of gathering in the cream of the dental literature of the world will be extended to other countries during the next year, and if Dr. Catching continues with his improvements, he will eventually produce a work whose value to the dentist cannot be estimated by dollars and cents. There are very few of the average readers of dental journals who realize the amount of matter appearing yearly that can be put to practical benefit till they see it gathered together in a volume like this. The task of doing this work has fallen into good hands, and we heartily commend the present volume to our readers.

THE DISCOVERY OF MODERN ANÆSTHESIA. BY WHOM WAS IT MADE? A BRIEF STATEMENT OF FACTS. By Dr. Laird W. Nevius. Pp. 111. Cloth, $1.00. New York, 1894.

This is a clear and concise statement of the claims put forward by different men to the discovery of anæsthesia, and makes interesting reading. Portraits are published of Drs. Long, Wells, Morton, Jackson and others; and the presentation of facts seems to be logical and unbiased. The mechanical execution of the work is excellent; the type is clear and bold and the paper of the best quality. It is to be regretted that a book of this nature should be marred by such a decided lack of taste as is displayed in several instances. The author, for example, would have materially strengthened his work by the omission of the full page illustration of himself in the act of administering gas. This, with other minor discrepancies, would better have been left out. The author and his work would have been all the better for it, and the reader would have been as highly entertained.

Pamphlets Received.

A Partial System of Dental Nomenclature, Adopted by the Faculty of Northwestern University Dental School, 1894.

This is a pamphlet of fifteen pages, giving a system of nomenclature following "the same lines as those given in the report of the Committee on Nomenclature at the *World's Columbian Dental Congress, 1893.*" This is undoubtedly the most complete and most rational system that has ever been introduced in this country, and it will be found when the proceedings of the congress are published that the report of the chairman of that committee will prove one of the most valuable features of the whole congress. Argument has already been advanced in the pages of the Dental Review to urge the necessity for a uniformity in the use of dental terms, and almost every article appearing in our journals lends force to that argument. We commend this system as advocated in the committee's report to the careful consideration of every student of dental literature.

Twelfth Annual Report of the Illinois State Board of Dental Examiners. December 15, 1893.

The report, among other things, contains a list of questions out of which the future examinations of the board will be taken, as recently published in the Dental Review. It also presents the official register of legal dental practitioners, by which we find that there were, at the time the report was made, 1,829 duly registered dentists in Illinois.

PRACTICAL NOTES.

By Dr. John G. Harper, St. Louis, Mo,

Fusible Alloys.—The following alloys melt in boiling water and can be poured into plaster of paris impressions without any more drying out than is required for varnishing with sandarac or shellac varnish.

Newton's. Tin, 3 parts; lead, 2 parts; bismuth, 5 parts; melts at 100 degrees cent.

Rose's. Tin, 3 parts; lead, 8 parts; bismuth, 8 parts; melts at 95 degrees cent.

Erman's. Tin, 1 part; lead, 1 part; bismuth, 2 parts; melts at 93 degrees cent.

Wood's. Tin, 2 parts; lead, 4 parts; bismuth, 7 parts; cadmium, 1 part; melts at 70 degrees cent.

Erman's alloy can be easily made by taking equal parts of Plumber's half and half solder and bismuth. This is very much like Mellotte's alloy, which is composed of tin, 5 parts: lead, 3 parts, and bismuth 8 parts.

USE OF AMALGAM.

BY T. ELHANAN POWELL, D. D. S.

[Abstract of paper read before the Hayden Dental Society, December 18, 1893.]

While at college, I found the opinion current among students was, that any one with even a small amount of skill could insert an amalgam filling which would, under ordinary circumstances, last a number of years. This is certainly an erroneous idea; and this idea, coupled with consequent carelessness in its manipulation, is the foundation for many failures and the inevitable condemnation from men standing high in the counsels of the profession.

The use of amalgam under certain circumstances is not only permissible, but advisable. There are many cases where gold cannot be used to advantage; where caries has developed to such an extent that the walls are too frail to support it; and on the distal sides of second molars, where one cannot with certainty insert an absolutely perfect gold filling.

Of course we are all aware of the tendency of the amalgam filling to globulate (on account of the presence of mercury) and the discoloration which usually accompanies its use. One objection made by homœopathic physicians, is that the mercury is very injurious where a tonsilitic or diphtheretic diathesis exists. They not infrequently send their patients to the dentist to have amalgam fillings replaced by gold.

An amalgam, principally composed of antimony is said not to shrink, and one of tin or lead, but slightly. Amalgams are made from, cadmium, palladium, tellurium, tin, silver, zinc, platinum, copper, gold, etc.

That which appears to have given the best results is made from a combination of silver, gold and platinum. At present I am using Justi's gold and platina alloy, which works very satisfactorily in my hands.

In making fillings with amalgam, I always adjust the rubber dam when it can be done conveniently; as I believe the success of fillings depends largely on the condition of the cavity as regards the exclusion of all moisture.

Prof. Harlan used to say, "Two materials cannot occupy the same space." A lack of attention to this truism is responsible for more failures in the use of amalgam than any other one thing, and I am inclined to think, than all the others combined.

After the dam is applied the cavity should be flooded with an antiseptic, preferably oil of cassia on account of its diffusibility. During the process of excavating the soft parts, the cavity should be kept moist with the antiseptic so that decalcified dentine underlying the soft decay is thoroughly disinfected. If the cavity is a proximate one, the buccal, lingual and axial walls should be nearly perpendicular, with the floor an imperfect square slightly dovetailed toward the axial wall. The lingual and buccal angles may be somewhat rounded as the amalgam will have a more perfect adaptation to the rounded surface on account of the tendency of the mercury to ball up.

In this case a matrix would be convenient, as one could use the amalgam comparatively dry, and pack with considerable force into every part of the cavity.

Only a small amount of the alloy should be placed in the cavity at one time and this thoroughly condensed before more is added. The matrix would ordinarily extend to the top of the cavity, and would leave an excess of the material at this point, which should be dressed off so as to restore the natural contour of the tooth. The matrix should then be carefully removed and the cervical margin smoothed with a small strip of rubber dam stretched between the teeth. If the matrix has been properly adjusted to the cervical margin, the filling at that point will be quite smooth and the strip of rubber dam will remove any overhanging portion. After cutting the dam, so that it can be removed without endangering the margin of the filling, the patient is dismissed with the repeated caution to eat nothing hard on that tooth until the following day. An appointment for another sitting is made, at which time the filling should be industriously polished and if all the steps have been carefully carried out this will result in a piece of work that will reflect credit on the operator and give satisfaction to the patient.

MEMORANDA.

Do not forget the State meeting.

Prof. Brown-Sequard, of Elixer fame, is dead at Paris, France.

Dr. James Stewart, formerly of Chicago, has located at the Hague, Holland.

The twenty-third annual meeting of the Kansas State Dental Association will be held at Topeka, Kansas, April, 24, 25, 26, and 27, 1894.

ATKINSONIAN SOCIETY.

At the March meeting of this Society the following officers were elected for the coming year; President, Dr. J. G. Reid; Vice President, Dr. R. B. Tuller; Secretary Treasurer, Dr. G. J. Dennis.

WHEN ALL MEN QUAIL.

The Dentist—"I'm afraid I'll have to extract that tooth."

The Intrepid Hero of Ten African, Mexican, South American, Indian and Oriental Campaigns (reaching for his hat)—"Excuse me, doctor, I think—er—I've got an engagement at this very moment."

ARIZONA DENTAL ASSOCIATION.

The dentists of this Territory have organized themselves into an association, and elected the following officers: President, Dr. L. H. Goodrich; Vice President, Dr. Marshall; Secretary Treasurer, Dr. H. J. Jessop. We wish the new organization every success. It is an indication of progress to find association work spreading in all directions. We hope to hear good things from our Arizona *confreres* in the future.

HICCOUGHED HIS TEETH LOOSE.

We are nowadays hearing dreadful tales concerning the ravages of a new epidemic of hiccough. This time a Western paper reports the case of a Portland man who never took a drink of liquor in his life, but who hiccoughed for eighty hours, never lost a stroke, and loosened all his teeth; thus proving the energy of the terrible reflexes of his lower jaw, and the sustaining power of his restless diaphragm.—*Medical Record.*

DENTAL SOCIETY OF THE STATE OF NEW YORK.

The 26th annual meeting of this Society will be held in the Y. M. C. A. Building, Albany, on the 9th and 10th of May next. The following papers will be presented: "Crown and Bridge Work—a Protest Against some of its Abuses," by S. H. Guilford, D. D. S., Ph. D., Philadelphia; "Can Pyorrhœa be Cured?" by J. Allen Osmun, M. D. S., Newark, N. J.; "The Sixth Year Molars," by R. M. Sanger, D. D. S., E. Orange, N. J.; "The Use of Peroxide of Sodium as Recommended by Dr. E. C. Kirk," W. J. Turner, M. D., D. D. S., Brooklyn.

Charles S. Butler, Sec'y, Buffalo, N. Y.

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society, held in Kindergarten Hall, April 3, 1894, the following officers were duly elected for the ensuing year;

J. H. Woolley, President; C. E. Bentley, First Vice President; D. M. Gallie, Second Vice President; A. H. Peck, Recording Secretary; H. A. Costner, Corresponding Secretary; E. D. Swain, Treasurer; J. J. Whaley, Librarian; J. N. Crouse, Director.

H. A. Costner,
Corresponding Secretary.

JOINT MEETING OF THE IOWA AND NEBRASKA STATE DENTAL SOCIETIES.

The annual meeting of the Iowa and Nebraska State Dental Societies will be a joint meeting, held May 1, 2, 3, 4, 1894 at Council Bluffs, Iowa, and Omaha, Nebraska.

Sessions will be held jointly. An excellent programme will be presented, and a profitable meeting may be expected. All are cordially invited to be present, and bring appliances, specimens, or anything of interest to the profession.

W. C. Davis, *Sec'y.* Nebraska Society.
Lincoln, Nebraska.
F. T. Breene, *Sec'y* Iowa Society,
Iowa City, Iowa.

Editor Dental Review. Chicago, Ill., April 3, 1894.

Dear Doctor:—Will you be kind enough to announce in the next (April) number of your esteemed journal, that the above board will meet at Springfield, Ill., on the 7th of May, 1894.

Candidates for examination by the above board must send their names, residence, and particulars of their experience in the dental profession to the undersigned no later than May 1, 1894. The fee for the examination is $2.00.

The twelfth annual report of this board, with the list of dentists of this State, can be had by applying to the undersigned, or Dr. G. A. McMillen, President, Alton, Ill. The report also contains the questions used at examinations. The postage of a report to any part of the United States, is one cent.

With regards, Fritz W. Huxmann, D. D. S., Sec'y.

ILLINOIS STATE DENTAL SOCIETY.

The thirtieth annual meeting of the Illinois State Dental Society will be held at Springfield May 8, 9, 10 and 11. The prospects are favorable for a good meeting, and members of the profession generally are invited to attend. Following is the programme as arranged up to date:

President's address, Dr. Garrett Newkirk. Report of Committee on Dental Science and Literature, Dr. A. W. Harlan. Report of Committee on Dental Art and Invention, Dr. W. B. Ames. Papers: "Etiology of Dental Caries," Dr. A. H. Peck. Discussion opened by Dr. G. V. Black. "The Relation of the Profession to our Dental Colleges," Dr. T. W. Brophy. Discussion opened by Dr. R. N. Laurance. "Swaged Aluminum Plates," Dr. Geo. D. Sitherwood. Discussion opened by Dr. Grafton Munroe. "Borderland between Filling and Crown Work," Dr. E. J. Perry. Discussion opened by Dr. W. H. Taggart. "Amalgam," Dr. T. W. Pritchett. Discussion opened by Dr. C. P. Pruyn. "Reciprocating Force in Orthodontia," Dr. C. S. Case. Discussion opened by Dr. A. E. Matteson. "Operative Dentistry," Dr. J. J. Jennelle. Discussion opened by Dr. Geo. H. Cushing.

CLINICS, WEDNESDAY, MAY 9, 9 A. M.

1. Dr. G. V. Black, Jacksonville, Ill. Preparation of Cavities. Showing his methods of obtaining proper form, margins and retention for fillings.

2. Dr. C. W. Leake, Chicago, Ill. Gold Filling. To demonstrate the use of the Harris pneumatic mallet in connection with the electric motor.

3. Dr. Edmund Noyes, Chicago, Ill. Root Canal Filling. Using Hill's stopping, softened by eucalyptol and heat.

4. Dr. W. H. Taggart, Chicago, Ill. Exhibit of Crown and Bridge Work. Including the riveting of the porcelain faces in such work.

5. Dr. James Cormany, Mt. Carroll, Ill. Construction of a gold and amalgam substitute for the lingual cusp of a bicuspid.

6. Dr. J. Austin Dunn, Chicago, Ill. Exhibit of Dental Specialties.

THURSDAY, MAY 10, 9 A. M.

1. Dr. D. M. Cattell, Chicago, Ill. Fillings of aluminum, tin, cohesive and noncohesive gold, used separately and in combination.

2. Dr. E. H. Allen, Freeport, Ill. Gold Filling. To demonstrate the use of the Bonwill mechanical mallet in connection with the electric motor.

3. Dr. P. H. Morrison, St. Louis, Mo. Will construct a hard gold retaining pit filling, for a case of abrasion.

4. Dr. A. W. Hebert, Chicago, Ill. Demonstration of Crown and Bridge Work.

5. Dr. S. Finley Duncan, Joliet, Ill. Preparation and filling of pulp canals.

6. Dr. A. E. Matteson, Chicago, Ill. Exhibition of small furnace for porcelain work; using gas or gasoline blast.

CODE OF DENTAL ETHICS.

ADOPTED BY THE AMERICAN DENTAL ASSOCIATION, AUGUST, 1866.

ARTICLE I.

THE DUTIES OF THE PROFESSION TO THEIR PATIENTS.

Section 1. The dentist should be ever ready to respond to the wants of his patrons, and should fully recognize the obligations involved in the discharge of his duties toward them. As they are, in most cases, unable to correctly estimate the character of his operations, his own sense of right must guarantee faithfulness in their performance. His manner should be firm, yet kind and sympathizing, so as to gain the respect and confidence of his patients; and even the simplest case committed to his care should receive that attention which is due to any operation performed on living, sensitive tissue.

Sec. 2. It is not to be expected that the patient will possess a very extended or a very accurate knowledge of professional matters. The dentist should make due allowance for this, patiently explaining many things which may seem quite clear to himself, thus endeavoring to educate the public mind so that it will properly appreciate the beneficent efforts of our profession. He should encourage no false hopes by promising success where, in the nature of the case, there is uncertainty.

Sec. 3. The dentist should be temperate in all things, keeping both mind and body in the best possible health, that his patients may have the benefit of that clearness of judgment and skill which is their right

ARTICLE II.

MAINTAINING PROFESSIONAL CHARACTER.

Section 1. A member of the dental profession is bound to maintain its honor, and to labor earnestly to extend its sphere of usefulness. He should avoid anything in language and conduct calculated to discredit or dishonor his profession, and should ever manifest a due respect for his brethren. The young should show special respect to their seniors; the aged special encouragement to their juniors.

Sec. 2. The person and office arrangements of the dentist should indicate that he is a gentleman; and he should sustain a high toned moral character.

Sec. 3. It is unprofessional to resort to public advertisements, such as cards, handbills, posters, or signs calling attention to peculiar styles of work, prices for services, special modes of operating, or to claim superiority over neighboring practitioners; to publish reports of cases, or certificates in the public prints; to go from house to house soliciting or performing operations; to circulate or recommend nostrums, or to perform any other similar acts. But nothing in this section shall be so construed as to imply that it is unprofessional for dentists to announce in the public prints, or by card, simply their names, occupation, and place of business; or in the same manner to announce their removal, absence from, or return to business; or to issue, to their patients, appointment cards having a fee bill for professional services thereon.

Sec. 4. When consulted by the patient of another practitioner, the dentist should guard against inquiries or hints disparaging to the family dentist, or calculated to weaken the patient's confidence in him; and, if the interests of the patient will not be endangered thereby, the case should be temporarily treated, and referred back to the family dentist.

Sec. 5. When general rules shall have been adopted by members of the profession practicing in the same localities, in relation to fees, it is unprofessional and dishonorable to depart from these rules, except when variation of circumstances requires it. And it is ever to be regarded as unprofessional to warrant operations or work as an inducement to patronage.

ARTICLE III.

THE RELATIVE DUTIES OF DENTISTS AND PHYSICIANS.

Dental surgery is a specialty in medical science. Physicians and dentists should both bear this in mind. The dentist is professionally limited to diseases of the dental organs and the mouth. With these he should be more familiar than the general practitioner is expected to be; and while he recognizes the superiority of the physician in regard to diseases of the general system, the latter is under equal obligations to respect his higher attainments in his specialty. Where this principle governs, there can be no conflict, or even diversity of professional interests.

ARTICLE IV.

THE MUTUAL DUTIES OF THE PROFESSION AND THE PUBLIC.

Dentists are frequent witnesses, and at the same time the best judges, of the imposition perpetrated by quacks, and it is their duty to enlighten and warn the public in regard to them. For this and the many other benefits conferred by the competent and honorable dentist, the profession is entitled to the confidence and respect of the public, who should always discriminate in favor of the true man of science and integrity, and against the empiric and imposter. The public has no right to tax the time and talents of the profession in examinations, prescriptions, or in any way, without proper remuneration.

OBITUARY.

WILLIAM HENRY EAMES, D. D. S.

Dr. William Henry Eames died in St. Louis, at the residence of his daughter, Dr. Emma Eames Chase, on March 29, after a short illness.

He was born in Auburn, N. Y., August 23, 1828. His father, George Eames, soon after the birth of this son, removed to Oneida County, N. Y., where his father, James Eames, with his large family had settled in 1794. They were progressive people, taking an active part in all public affairs, and particularly interested in educational advancement. The active interest, untiring zeal and devotion with which Dr. Eames labored for the advancement of his profession, in the college, in the journals and in societies was a direct continuation of the spirit with which his father and grandfather before him had worked for the intellectual advancement of the rising generation. He was educated in the public schools, and at the Clinton Academy, in Oneida County. After teaching school several years he commenced the study of medicine with Dr. Porter, an eminent English physician, and went to Ann Arbor to complete his medical studies at the Michigan University. While there, he decided to study dentistry, and entered the Ohio Dental College, graduating in 1853. He returned to Ann Arbor and formed a partnership with his preceptor, Dr. Porter. He was married in 1855, to Laura M. Scofield, of Clinton, Michigan, and removed to Lebanon, Tenn , in 1857, remaining there until 1862, when owing to the disturbed condition of the South, he removed to St. Louis, Mo. He at once became a member of the St. Louis Dental Society, and always took an active and prominent part in the profession in St. Louis. It was at a meeting of the society at his residence that the subject of organizing a dental college in St. Louis was introduced. There were present at this meeting Drs. Judd, McKellops, Forbes, Peebles and others, and from its first inception he was an active worker, continuing through many years to the very night before he was stricken down. He was one of the founders of the *Missouri Dental Journal*, and for many years its editor; and later, editor of the *Archives of Dentistry*, which succeeded it. Dr. Eames was an active member of the American Dental Association, the Missouri State Dental Association, and the St. Louis Dental Society; the last two of which he has been President of at different times. He had also served as President of the Association of Dental College Faculties, and was an honorary member of the Illinois, Iowa and other State and district dental societies. It is not necessary to speak here of the genial nature and the many admirable qualities of our departed brother; these are known to all who ever had the pleasure of his acquaintance, and will be referred to as pleasant recollections until all have followed him to the other side.

The doctor leaves a wife and seven grown children; two sons and five daughters.

A. H. Fuller.

DR. EAMES' DEATH.

The death of Dr. W. H. Eames, of St. Louis, leaves a vacancy in the profession that will be felt throughout the land wherever he was known —and he was known almost everywhere. The dentists of the West will miss him, and particularly the dentists of St. Louis, where he held the warmest friendships. In

Chicago he was well and favorably known, and his death was a blow to his many friends in this city.

At the regular meeting of the Chicago Dental Society, April 3, 1894, the following resolutions were passed:

WHEREAS, It has come to the knowledge of the members of the Chicago Dental Society that the dental profession is called to mourn the loss of one of its most distinguished and honored members. Therefore, be it

Resolved, That in the decease of Prof. W. H. Eames the world has lost one of its foremost educators, his family a devoted husband and father, and the profession a sincere, earnest and useful devotee. It is fitting that the society should pay its tribute of respect to one who has so long and honorably filled the position, before the world, and we mourn his death as a personal loss to each and all of us. Be it further

Resolved, That a copy of these lines be transmitted to the family of the deceased, and a further copy be sent to the journals for publication.

A. W. HARLAN,
TRUMAN W. BROPHY,
EDGAR D. SWAIN.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

JUMPING THE BITE*.

BY C. S. CASE, D. D. S., M. D., CHICAGO, ILL.

In the May, '92 number of the *Dental Cosmos* appears one of a series of articles entitled "Adenoid growths, mouth breathing and thumb-sucking in their relation to deformities of the jaws and irregular teeth," by Norman Kingsley. In describing the method which he pursued in reducing an abnormal protruding upper jaw with the use of a plate, which was first used to force the anterior superior teeth to a more posterior position in the alveolar arch, he says:

> "On February 1, a flange was built on this plate behind the incisors to 'jump the bite.' This plate is shown in figure 22. In a few weeks the patient had acquired the habit of shutting the lower jaw in its new place, and the work was virtually complete, but the wearing of the plate was still continued until midsummer, more as a retainer than otherwise.
>
> "This apparatus was then discarded and a crib of light gold wire was substituted as a retainer. The result of the correction is shown in figure 23, representing the articulated models, and in figure 24, giving a profile of the face as the patient is at the present time."

In passing I call your attention to his off-hand method of describing an operation that had no recorded legitimacy up to that date, and one too, which few would feel justified in attempting. He apparently brushes it aside with a few words, as too common and too simple to be worthy of a fuller description, leaving one to infer that all that is really necessary in this operation is to oblige the patient when closing the jaw, to protrude the lower forward the width of a bicuspid for a few weeks—or even months—when the habit of shutting the lower jaw in its new place will be acquired and the operation virtually completed.

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*Read before the Odontological Society, March, 1894.

Again on page 361 he continues as follows in the description of another case:

NOTE 1. "The last case which I shall present in this series is that of a young lady eighteen years of age. The projection of the upper jaw produced an effect upon the expression of the face that was almost repulsive. This is shown in two views of the face, Figs. 25 and 26, and in the articulated models, Fig. 27.

"The front of the upper incisors here are in advance of the lower incisors 18-32 of an inch, and while the discrepancy is nearly the same as in the last case, it is relatively less because these jaws are large, and the teeth are large. There is but little in this case other than the discrepancy and its striking effect upon the external features. * * * * * *

"The ideal to be attained in this case was to widen the jaw, flatten it in front, reducing it incidentally, *jump the bite* to a normal one, and, thus advancing the lower jaw and chin, restore the natural and inherited contour of the face.

"The first apparatus for correction was almost identical with that illustrated in Fig. 12 (p. 103)—a vulcanite plate, jack screw and reducing band on the central incisors with rubber straps.

"This apparatus, with its renewals of elastics, was worn for a month, and the arch was widened across from the first bicuspid three-fourths the diameter of one of those teeth." * * * * *

"The apparatus for jumping the bite was made of silver plate and was essentially the same as that shown in Fig. 22. It is here shown in Fig. 29, and was made to cover all the teeth posterior to the cuspids; it thus bound them immovably to that form of arch.

"It was at this time approaching the summer, and the patient was desirous of spending a few months in the country, but I was not quite willing to trust to *her own volition* to change the bite, particularly as I discovered a tendency on her part to constantly drop the lower jaw. Whether this habit arose from her former inability to bring the lips together, or whether it was a mouth breathing habit arising from other causes, I cannot say; however, it seemed sufficiently confirmed to need extraneous help to break it up, and I devised the apparatus illustrated in Figs. 30 and 31.

"The appliance for the mouth, Fig. 30, was a copy of the silver plate already being worn, also made of silver with the addition of arms being attached to it, projecting from the corners of the mouth and extending along the face a couple of inches toward the ears. A skeleton skullcap was also made and connected with the arms by an elastic strap as seen in Fig. 31. This as will be seen was thus acting only upon the upper jaws, and was not originally intended to reduce that undue prominence, nevertheless it did prove of great value in that direction.

"The primary object of this skullcap and its connections with the plate in the mouth was to afford an attachment for an elastic band going under the chin, which should press with only sufficient force to overcome the natural inclination of the lower jaws to drop.

"The patient had now two appliances for jumping the bite, and one or the other was worn constantly—the skullcap at night and as much as convenience would permit during the day.

"She was absent six months and on her return the lower jaw seemed to have found a resting place permanently in its new and normal location."

The only difference in the method employed between this and the former case was the elastic band under the chin "which pressed with just sufficient force to overcome the inclination" which he had noticed in the patient to drop the lower jaw, and was used in this case because he was not willing to trust to the *volition* of the patient to change the bite in the next few months as seems to have been done in the former case.

Let any one tie a handkerchief tautly over the head and under the chin, and then notice with what ease the jaws can be opened sufficiently to take in a finger.

Now protrude the lower jaw the width of one tooth, and after holding it in that position ten or fifteen minutes, you can better judge of the tendency after hours in that posture to unlock it from a flange on an upper plate which extended back of the lower teeth, and allow the jaw to slide back into its natural resting position in the sockets; and, too, you can then judge something of the amount of power requisite in those elastic bands under the chin which pressed with only sufficient force to overcome this tendency.

I believe that few people would have sufficient will power to resist the demands of nature to find ease and rest under these circumstances, any more than when holding by their own volition, any other member of the body in a position where the muscles and ligaments are not in perfect repose. And I also believe that this tendency to find rest would be sufficient in itself to overcome any possibility of a surgical apparatus to permit it.

If an apparatus can be made which will allow the jaws to open and close, but prevent the possibility of the condyles passing back into their sockets (as it seems to me would be our only hope of a successful result), considerable inflammation and pain would naturally ensue until the tissues became accustomed to the new position, though it probably would not be as severe as when other joints are dislocated. You will notice later what Dr. Goddard has to say of a patient who was obliged to throw the lower jaw forward in this position in order to masticate his food and the severe neuralgic pains that resulted.

To me it is disappointing, that in the entire series of these articles from the pen of no less a man than Dr. Kingsley—in which are authentically introduced for the first time in history, a number of cases, where he has performed the operation of 'jumping the bite,' illustrated by what purports to be exact copies of models made from plaster impressions of face and jaws—that he should so completely ignore the real question at issue, as not to even make the slightest reference to important structural changes at the joint which must result before he can say these operations are truly successful, or even beyond the probability of a return to the former condition.

At the meeting of the dental society of the State of New York, May 11, 1892, following the publication of the article referred to by Dr. Kingsley, Dr. Eugene Talbot read a paper entitled "The Treatment of Irregularities of the Teeth," which was published in the following October number of the *Dental Cosmos.*

On page 791 is found the following paragraph from that paper:

> Considerable was said years ago about "jumping the bite," as it is called, and a number of articles have appeared this past winter in the dental journals in which this subject has been revived. As I understand this phrase, it consists in throwing the lower jaw forward the width of a bicuspid, thus bringing the lower incisors closer to the posterior surfaces of the upper incisors, and also causing the chin to become more prominent. In a case like this, one of two conditions exists; either the upper jaw has developed beyond its normal position, or the lower jaw is arrested in its development. The latter is most likely the case in a large majority of cases. In either case the articulation at the joint is in a normal condition. I have never been able to "jump the bite," although I have tried it in a number of cases. I do not believe any one else has been able to accomplish it, nor do I believe that such a thing is possible. Were such a thing possible, one of two things must take place. First, absorption and deposition of bone cells must take place at the weakest part of the jaw—namely, at the angle—to allow of the forward movement, which is out of the question, for two reasons. First, there is not pressure enough; and second, if it could take place, the articulation of the teeth would be spoiled. Second, there must be a forward movement by absorption of the condyle in the glenoid cavity of the same amount of space to correspond to the forward movement of the teeth, which is out of the question for three reasons. First, there is not pressure enough to produce the absorption, second, tissue in front of the cavity would become involved; and third, nature would not construct a new cavity to accommodate the condyle.

I really cannot see the force in any of his negative premises or conclusions.

Let us stop here a moment and analyze this paragraph. First, please to remember that he perfectly describes the operation of jumping the bite and gives his opinion of what must result in case it is performed. And he distinctly says he has never been able to jump the bite although he has tried it in a number of cases. Nor does he believe any one else has been able to accomplish it—nor that such a thing is possible.

Then follow his reasons: "First, absorption and deposition of bone cells must take place at the weakest part of the jaw, namely the angle, to allow for its forward movement which is out of the question."

Is the weakest part of the lower jaw at the angle? Why must a change necessarily occur there to allow for its forward movement when it is not necessary in the natural forward movement of the jaw? He says, "there is not pressure enough to produce the requisite change, and if there was, the articulation of the teeth would be spoiled." What can prevent one from correcting the occlusion of the teeth as in other cases of irregularity?

"Second, there must be a forward movement by absorption of the condyle in the glenoid cavity of the same amount of space to correspond to the forward movement of the teeth," (This in addition to the change at the angle.) "which is also out of the question for *three* reasons."

"First, there is not pressure enough to produce the absorption." How does he know that? If the occlusion of the molar teeth is prevented by the condyle resting on the eminentia-articularis, and it is absolutely prevented by mechanical means from passing back to a higher place in the glenoid fossa, could there be any more pressure than that exerted by the masticating muscles to bring the teeth together? And while other changes would doubtless result, would not absorption of bone occur as in similar instances of equal pressure?

"Second, tissue in front of the cavity would be involved." Why any more than when the jaws are performing their natural function of incising food? And "third, nature would not construct a new cavity to accommodate the condyle." Nature often constructs an entirely new socket for the head of a bone that has been dislocated, as she certainly would in this instance, if the body of the jaw is so held that it does not allow the condyle to slide back into its original socket, or if the condyle does not bend at the neck sufficiently to permit this.

In the May number of the *Cosmos* following the reading of Dr. Talbot's paper, Dr. Kingsley, in the continuation of his articles on adenoid growths, etc., in referring to the causes in a case of abnormal protruding upper jaw, writes as follows:

> I can only offer a theory; that it was the result of accidental causes occurring at the time of the eruption of the second set, beginning with some slight deviation of occlusion which may have affected the articulation at the condyles, and that in turn aggravating the malocclusion of the teeth. I am quite aware that such a

theory will be scouted by Dr. Talbot (*vide* his paper before the New York State Dental Society, 1892) yet in that same paper he says, "I have never been able to 'jump the bite,' although I have tried in a number of cases. I do not believe any one else has been able to accomplish it, nor do I believe such a thing is possible."

This is the most extraordinary statement I have ever read from that fertile author, and it argues either that I attempt to impose falsehoods upon my colleagues, or that I *can* accomplish that which Dr. Talbot cannot, and which he believes *impossible* because *he* cannot. It has been done repeatedly by me for more than twenty years, and the great change in facial appearance in the case (Figs. 25 and 32) was due almost entirely to "jumping the bite." A moment's reflection will recall the knowledge to any dentist that the lower jaw can be moved forward or backward on the same plane more than the diameter of a tooth, and this difficulty confronts every one in making full sets of artificial teeth.

This was followed in the July number of the *Cosmos* by Dr. Talbot offering $100 to Dr. Kingsley or any other dentist who would successfully perform the operation of jumping the bite, and which brought the response from Dr. Kingsley that it would be altogether beneath his dignity to accept the challenge.

At the meeting of the World's Columbian Dental Congress the following subject was introduced in Section VII. for discussion: "1. What are the etiological factors in production of the protruded or retracted lower jaw? 2. When this form of irregularity is corrected by jumping the bite, does a compensating adjustment take place in the temporomaxillary articulation?"

In order to bring all the literature extant upon this very obscure subject before you, I shall take the liberty to quote the opinions of the different members who engaged in this discussion, where they had reference to the operation of jumping the bite.

The discussion was opened by Dr. Black, whose remarks were confined to introducing a new theory for the cause and result of one form of protruded lower jaw, but as they are pertinent to this question, and one form of it which I shall attempt to amplify before closing, I will leave him until the last.

Dr. TALBOT: I like to have a good lively discussion, and so a number of years ago I read a paper in New York expecting that Dr. Kingsley would be present, but he failed to appear. I criticised a statement he had made in regard to the manner of jumping the bite, and I supposed some one here this afternoon was going to open that subject, and that is the reason I am here. I wanted to get some points in regard to it. The point that Dr. Kingsley makes is that in what he calls jumping the bite when the lower jaw is brought forward the width of a tooth, that a change takes place in the glenoid cavity, and a new socket is formed and in that way the connection is made.

Unfortunately Dr. Kingsley was not present, and so when I reached home I offered a hundred dollars reward for such a case if Dr. Kingsley or any other dentist would correct a case of irregularity of the teeth by producing a forward movement of the lower jaw in the glenoid cavity. It is stated by some dentists that I claimed that jumping the bite could not be done. That is wrong. I have done it perhaps three or four times in my practice—that is, I have brought the lower teeth forward by what I claim is an absorption and deposition of the cells of the bone, and not by a forward movement of the jaw entirely. * * *

Dr. Kingsley is the only one on record who has ever done that work, although he claims hundreds have done it.

Dr. GODDARD: I have very little to say about jumping the bite. It is something I have not attempted, because I did not believe it could be done. I simply want to relate a case in practice which more than ever convinced me of the impossibility.

I have a patient who in closing his teeth naturally, shut together the cutting edges of the incisors, and in doing so the articulating surfaces of the bicuspids and molars lacked about an eighth of an inch of touching. In order to masticate he protruded the lower jaw, so that the inferior incisors closed outside of the superior, and that was his normal articulation for use. The patient was thirty years old, and it seems to me if the bite could be jumped it would have been jumped in that case, when there was every reason for him to close in front all the time. * * *

The only difficulty was a straining of the parts in the temporo-maxillary articulation, so that he had neuralgia every time he masticated.

Dr. MORRISON: I think in regard to jumping the bite, those things are accomplished in the glenoid cavity, either by extending the condyle in the lower jaw, or by the filling up of the cavity. Nature is very accommodating under these circumstances, and comes generally to our rescue.

Dr. GODDARD: I want to ask Dr. Morrison if he believes the jumping of the bite possible, whether he has seen cases that have convinced him that the lower jaw had been moved forward the distance of one tooth?

Dr. MORRISON: Only by the real assistance and determination of the patient. I have seen many of these cases where I supposed I would be successful, and had claimed considerable glory in the matter, but I really had not accomplished anything.

It is only by a persistent effort on the part of the operator and an intelligent determination on the part of the patient to accomplish it that it can be done. The teeth return in every case.

Dr. Talbot: It seems to me that this question was brought up here with the idea of bringing out one or two points, and these cases that have been cited are not to the point at all. I do not think there is a gentleman in the room that has corrected a case of irregularity who has not been able to throw the teeth of the lower jaw forward the width of a tooth. That is not the point. The point is what takes place. Are the teeth moved in the sockets forward, or does absorption and deposition of bone take place in the glenoid cavity proper? These are the points we want to get some light on. It is not a matter of whether the jaw goes forward. We all admit that.

Dr. Case: I do not see how it would be possible for us to obtain any definite enlightenment upon this question unless we could get possession of the cadaver of some person who has had the jaw permanently moved in this way, and by careful examination of the glenoid cavity and surrounding parts determine, if possible, whether there has been an absorption or deposition of bone tissue, or a new socket formed. The peculiar shape and function of the condyle in its relations to the temporomaxillary articulation during natural movements, and what must result if the jaw is made to permanently change its relative position is the principal feature to be considered. I have no doubt a certain amount of absorption and deposition of matter takes place in the glenoid cavity when the jaw is permanently moved forward or back. In the latter movement, if the patient is sufficiently young, and we can obtain the requisite force upon the chin or upon the teeth in entire phalanx we no doubt bend to a certain extent the condyles at their necks, and at the same time produce absorption along the posterior walls of the glenoid fossæ. I simply believe that this takes place because it does in other like instances where a similar force is used, but I do not see how it could be positively proven unless by a post-mortem examination. The forward movement of the jaw in the so-called operation of jumping the bite has interested the dental profession of late, especially through the influence of the controversy that has taken place between Drs. Kingsley and Talbot, and I have no doubt that Dr. Talbot's ideas accord with a large proportion of the profession.

I doubt very much that the bite can be jumped in any short length of time. As soon as the jaw is moved forward the heads of the condyles rest upon the inclined surface of the articular eminence with a tendency always to move back into the sockets. If the jaw can be held in that position, which is very doubtful, and not permitted to pass back into the glenoid fossæ then these would naturally fill with new tissue as in other similar instances, and new sockets would be formed. And when from any cause the jaw has been held in that way for a long time with a young person, no doubt that has taken place.

Dr. MORRISON: The condyle has changed shape?

Dr. CASE: I do not believe it has ever changed in the short time Dr. Kingsley has claimed. I was in New York when he read his paper upon that subject, and saw a patient of his wearing at that time, an apparatus that held the jaw in the desired position. It is easy enough for a man to place the jaw forward the full width of a tooth and then take an impression of the face and say he has jumped the bite, but to fully accomplish the operation there is something more to provide for than the mere temporary relative change of position.

The successful operation has to do with the forming of new sockets by the deposition of a large amount of bone. And we know as in other operations in surgery that is impossible, unless the bones are prevented from passing back into their original place.

If that could be done with a young patient no doubt we would have the required deposition and absorption for a new socket. At the same time we would have a backward bend of the condyle, resting as it would upon the inclined plane of the articular eminence. At every masticating closure of the jaws the head of the condyle would be forced against this slanting surface, with a tendency to bend it backward at its neck or in the body of the ramus.

Dr. NEWKIRK: Here are men that state they have jumped the bite. I suppose they have watched the cases long enough to consider the bite jumped permanently. Here is another man who says he does not believe it can be done—does not believe it ever has been done. There is a question of fact to be decided in the future. That is a point-blank question, can it be done? If it was done, how was it done? Was it done by the movement of the teeth? Probably in part. In my own mind there is not much doubt about that. Was it done by change in the form of the jaw? I rather think so. I do not know. It has not been demonstrated and as Dr. Case says, "unless you can make post-mortem, and demonstrate it anatomically, it is bound to be a theory." What difference does it make to the patient whether Dr. Talbot be correct or Dr. Kingsley be correct? If it can be done, it does not make any difference what changes take place. I am not inclined to accept Dr. Kingsley's theory at all. I am inclined to think that Dr. Talbot is right, in that the change is interstitial in the bone itself.

Dr. TALBOT: In the lower jaw, not in the cavity.

Dr. NEWKIRK: I hold that a change takes place all through, by reason of the force that is brought to bear upon the part of the bone. I think that is a reasonable theory, but I do not know anything about it, and I do not suppose anybody else does.

Dr. TALBOT: Just one word in closing the subject. In reply to the remarks made that it was of no consequence whether we know anything about it, and that we have to dissect a patient before we can find out whether the glenoid cavity is moved or not, I would like to ask the gentleman if the lower jaw is brought forward, if it does not have to slide down on this eminence? (Referring to illustration of the articular eminence.) If it slides down on that eminence, there must be a space between the lower teeth so you can stick your penknife between.

That is proof enough to know whether that jaw is brought forward or not, and it is simply a matter of the length of time that it takes bone cells to form and fix the jaw over it, which would be two or three months that we would have to decide whether the jaw is lower at that point. That settles that point right there.

Instead of using a blackboard illustration to represent the temporomaxillary articulation as it is commonly seen in the skeleton, with the head of the condyle resting deeply in the glenoid fossa and prevented from a forward movement without sliding downward at an angle of 45° along the inclined plane of the posterior surface of the eminentia-articularis, as seen by examining the skeleton, if Dr. Talbot had resorted to the more practical method of illustrating what he seems to have kept in reserve for the finishing stroke to all further argument, by asking all the gentlemen present to throw their lower jaws forward while the teeth are firmly closed, he would have been confronted with the fact that nearly all would have retained an occlusion of the cusps of the posterior teeth until the inferior incisors came in contact with the posterior surfaces of the superior incisors. In those cases where the superior incisors lapped considerably over the inferiors, the jaws would necessarily open to that extent in coming to an incisive occlusion. But in other instances where the lapping was slight, and again when the upper teeth protruded far in front of the lowers, nearly all would have been able to force the lower jaw forward the width of a bicuspid without freeing the posterior teeth from actual contact at several points. And I argue that in all movements of this kind, it is usually these points of contact of the cusps of the posterior, and other teeth, which prevent a more perfect occlusion, and not because the posterior part of the jaw is necessarily forced apart by the relations sustained at the temporomaxillary articulation.

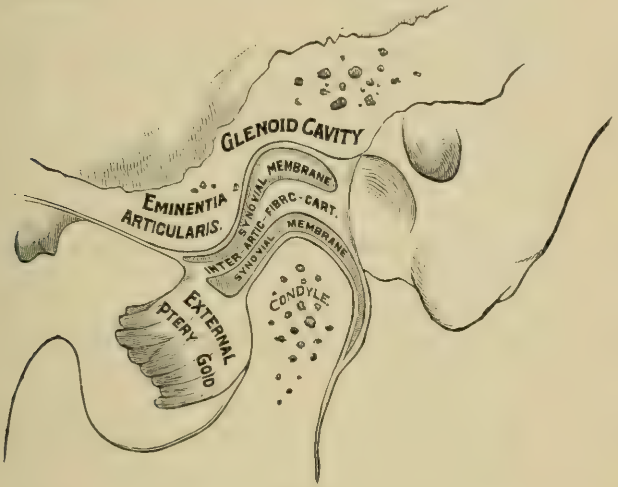

FIG. 1.

The explanation for this may be found by examining the temporomaxillary articulation in the natural state with all the membranes intact. Gray says of it: "This is an arthrodial joint; the parts entering into its formation are on each side the anterior part of the glenoid cavity of the temporal bone and the eminentia-articularis above, with the condyle of the lower jaw below."

Then follows a description of the ligaments. Continuing, he says: "*The interarticular fibrocartilage* (Fig. 216) [see Fig. 1, which is a copy of Fig. 216] is a thin plate of oval form placed horizontally between the condyle of the lower jaw and the glenoid cavity. Its upper surface is concave from before backward and a little convex transversely to accommodate itself to the form of the glenoid cavity. Its under surface, where it is in contact with the condyle, is concave. * * * * * *

"The fibers of which it is composed have a concentric arrangement, more apparent at the circumference than at the center. Its surfaces are smooth and divide the joint into two cavities each one of which is furnished with a separate synovial membrane.

"*The synovial membranes*, two in number, are placed one above and the other below the fibrocartilage. The upper one—the larger and looser of the two—is continued from the margin of the cartilage covering the glenoid cavity and eminentia-articularis over the upper surface of the fibrocartilage. The lower one is interposed between the under surface of the fibrocartilage and the condyle of the jaw, being prolonged downward a little further behind than in front."

Here we have then in addition to that which is shown by the macerated bones two articular cartilages, one above and one below; two synovial membranes or closed serous sacs; and one interarticular fibrocartilage. I am assured by Dr. Boreland, Demonstrator of dental anatomy in the Chicago College of Dental Surgery, whose statement is confirmed by my own examination of a number of cadavers in the dissecting room, that the interposition of these several tissues separates the bones proper of the temporomaxillary articulation at least three-sixteenths of an inch in the adult, and probably a greater distance in childhood, when they are proportionately more soft and yielding.

When the jaws are in the position of a masticating closure, with the muscles relaxed, the upper surfaces of the condyles are about on a plane with the lowest portion of the eminentia-articularis, taking a much lower position in their relations to the glenoid fossæ than would seem probable by an adjustment of macerated bones, the space between being filled by the cushion-like interarticular tissues which yield more or less to the pressure of the masticating muscles, so that the bones at times are forced nearer together; though never so nearly in contact as when the lower jaw is thrown forward, by reason of the fact that the interarticular fibrocartilage is much thicker when it covers the deeper portion of the glenoid fossæ than over the eminentia-articularis, where it is often so thin that its center is perforated.

Were it not for this fact, when the lower jaw is thrown forward the condyles being held at the same relative distance from the eminentia-articularis that they are from the under surface of the glenoid fossæ, they would be obliged to take a direction in keeping with the plane of their surfaces, or similar to that permitted by the bones themselves, and in accord with Dr. Talbot's theory, which any one can easily verify, if true, upon living subjects. [TO BE CONTINUED.]

DOCTORATE ADDRESS.*

BY E. H. ANGLE, D. D. S., MINNEAPOLIS, MINN.

MR. PRESIDENT, MEMBERS OF THE GRADUATING CLASS, AND LADIES AND GENTLEMEN: The duty of saying a parting word to the graduating class having devolved upon me in regular succession, I shall assume that you, one and all, understand the proper scope of this address, that you appreciate the fact that it is immediately directed to these recent graduates, that it must deal with subjects which especially concern them, that it should tend, if possible, to be of some service to them. The rest of you will pardon me, therefore, if I fail to interest you. This I am hopeful you will do, when you are reminded that none of us, excepting the graduates to whom I have alluded, are here for our own interests or pleasure. We are here to rejoice with them in the reward which to-night crowns three years of anxious study. To them, therefore, I particularly address myself, feeling that theirs is the hour, and theirs the occasion.

Graduates in dentistry—at this, the commencement of your professional life, you naturally look for some advice or information which will enable you to reach the goal of success with absolute certainty and all possible dispatch. I doubt, however, whether, even if it were in my power, it would be a kindness to give you the talisman you desire. It is perhaps fortunate, therefore, that I cannot. In fact, the germs of final fruition are already implanted in each of you, and all that I, or any one can do, is to attempt to train the tender plant of success, and to prune the gnarled and knotted twig of failure, with a view to maintain the former in the direction in which it has already started, and, if possible, to turn the latter from its waywardness. The patience and untiring energy you have all shown in the long course of study you have just completed is evidence enough of the strong desire you have to make your lives a success. Let me tell you frankly in the beginning, if you would achieve success, you must merit it; you must understand and conform to the laws which govern it; for I believe in a general way, that these laws are as well defined as the conditions which govern the growth of a plant, or the law of gravitation, and that the violation of any of which will be followed by necessary failure. There is nothing miraculous in success or failure; both are founded on these established laws, and can, in most instances, be easily accounted for. Men often fail to meet that degree of the former which they think they merit, or even that their friends may think they deserve; but analyze their cases carefully, and you will find some fundamental principle wofully lacking, or some combination of conditions, which weigh against their progress. I have been a careful observer of dentists for a number of years and have noted their successes and failures, and I will try to describe to you what I believe are some of the main conditions which you must fulfill if you will take high rank in your profession. In the first place, you may as well settle upon the one great principle underlying success—really the greatest I shall give you. It is integrity. Without it no true success has ever yet been attained by any member of your profession. Honesty, absolute, unflinching honesty, no man ever yet evaded without paying for it dearly sooner or later. I know that in the practice of dentistry to-day there are many temptations to modify this term, to seek short and easy routes, to gild over and substitute the semblance for the real; but be not deceived, for in the end you will deceive no one but yourselves. You will be judged with absolute accuracy as to your true worth. You may deceive men for a time, but the deception will surely react upon you in ways you least expect, and with telling effect. Remember you are not building for a day, but for time, for your lives, for your posterity, and that without honest methods there cannot be that development of character which is an ever present power with true men. Honest men are always known, recognized and trusted. Without that confidence which is born of integrity no lasting success was ever yet attained. It is the one principle you can, with absolute confidence, tie to. "Whatsoever ye sow, that will ye also reap." I do not mean you must necessarily be religious, in the commonly accepted meaning of the term, but I mean that you must have that quality of honesty of character which is bounded by no creeds, or sects, no conditions of life or stations in society, but is possessed by all true men and women in all ages of the world. It is the principle which illumined the soul of Oliver Cromwell, gave undying luster to the name of Abraham Lincoln, and tender sweetness to the great heart of St. Francis of Assisi.

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*Delivered to the graduating class American College of Dental Surgery, April 2, 1894.

Another condition of success is to do all things you attempt in the best possible manner. Slight nothing, however trifling in its apparent unimportance. Emerson tells us, "There is always the best way of doing everything, if it be but to boil an egg." If I could but impress upon you the importance of this great principle, at this, the beginning of your career, I believe I would have accomplished much toward rendering that career highly successful.

I know of no occupation where the full force and meaning of this truth is so directly applicable as to dentistry ; ours is by no means an occult science. The result of each operation is manifest and undisguised. Our mistakes are written in bold and ofttimes glaring characters. We cannot, like the physician, look to kind old nature to step in and help us out with our blunders, or mercifully bury them beneath four feet of clay. Not so ; the effect of each stroke of the excavator or plugger must last without change—a mark for or against us—which may, like the ghost of Banquo, arise ever and again to confront us. Do not think you can be careless or slovenly in performing any part of your operations, and, at will, change the tendency and be skillful. It would be just as impossible in dental operations as in penmanship, or in playing the piano, in which, to be really artistic, you require constant, rigid practice toward the ideal. I am confident that many of you will never be contented to rank only as common dentists. To these I would say, remember it is by doing your very best each time that you will rise above mediocrity. Do you suppose the great names of Webb or Varney would to-day be known wherever dentistry is taught, had they not performed each operation to the level of their best, until they had finally developed that degree of skill which made their work the wonder and admiration of all? The chief difference between a truly skillful dentist and that semblance of one who plasters the windows and the front of his office over with huge pictures of artificial plates and bridges, is that the one has developed his art by his painstaking methods, and thereby naturally and surely attracts patients by his skill ; while the other is content to remain a sloven, who can only entrap the ignorant by his vulgar display of paint and of boxes of teeth.

My friends, I have dwelt somewhat at length upon this point, even at the risk of wearying you, but I have done so after much observation because I feel that it is of much importance. Never in the history of dentistry has there been a time when there was such real need of truly skillful dentists. I claim that there is no strife at present among the competent. They are too few. I have yet to see a truly competent dentist who lacks for patients. The strife and contention is largely between the mediocre. And this leads me to another point. The field of dentistry has broadened of late years, and grown so large that few, if any, can now claim to be skilled in all its branches. The day of the truly all around dentist has forever passed. Therefore, I advise you to decide upon some particular branch of the science and qualify yourself to do that special line of work better than any of your competitors. I promise that you will be richly rewarded, both in the success it will give you financially, and in the standing it will afford you in your profession. You cannot do this all at once. Take years, if necessary, but do not first develop that specialty to the exclusion of all other branches of the profession. Grow in all, but grow most in one, the one most suited to your aptitudes and liking. There are great opportunities for specialties in dentistry to-day, and I predict that the next ten years will find the lines of demarcation between them much more clearly defined than at present.

Let your offices be models of neatness, having the air of refinement which shall characterize them as artistically fitted drawing rooms, rather than as places where unpleasant operations are to be performed. By all means eliminate, as much as possible, that vulgar display of instruments, gas apparatus, machinery, etc., so common among the "cheap John" class of dentists. You may not be able to furnish and fit your office according to your ideal at once, but do so as rapidly as possible. Money intelligently invested in artistic furniture and fittings will pay you handsomely, for an air of refinement and taste in a well furnished office, commands a certain amount of respect, just as will your clothing if it be fine and in good taste. Become good judges of the proper forms of instruments, and buy only the very best; cheap material is dear in the long run.

Yet another principle is to observe method in your professional duties and in your relations to your patients; for the value of this habit, intelligently and persistently maintained, through the entire course of your professional career, cannot be overestimated. Of two men starting out under equal conditions, the man of method will accomplish vastly the more. By learning this, you will be enabled, not only to devote the necessary time and skill to each operation, but also to find time for healthful recreation—both mental and physical.

Establish regular office hours and be punctual in keeping them, but do not become the slaves that many do to over-office hours. I could point you to several physical wrecks as a result of overwork, which in most cases means overhours. Your duties, it is well known, necessitate much strain, both upon the eyes and nerves. Without regular rest, that fine touch and finish so necessary to constantly cultivate, cannot be maintained. Your work will be of the most exacting kind, requiring gentleness, and at the same time an iron will, that will not yield to the exaggerated pains of your patient. Do not, therefore, confine yourselves too closely to your office or laboratory, but seek recreation in the open air, by the seaside or in the mountains at every opportunity, so that your physical constitution will not become impaired. You can, by this means, cultivate an even temper and a jovial, sympathetic nature, which oftentimes yields greater success, socially and financially, than the most painstaking skill. The active useful career of a dentist is necessarily brief at best, and it can be prolonged only by physical rest or recreation in the open air where there can be complete relaxation from the severe tension upon the nervous system which office hours entail. At the first intimation of constitutional weakness seek the rest and change which nature affords, and receive her ever-renewing vitality and force of inspiration.

There are three or four general and fundamental suggestions which, while they may apply with equal aptness to every profession, yet, from this very fact, cannot be well omitted on this occasion. The first is that of dress. Dress well, neatly, and in good taste, for "the apparel oft proclaims the man." I believe in the truthfulness of this as applied to dentists.

There is another principle which you will do well to bear in mind. It is that the class of patients which you will attract will be largely determined by your own type. The great law of natural selection is nowhere more truly exemplified. If you would seek your patrons among the cultured and refined, you must also be cultured and refined. If careless in your language and habits, you will attract a similar class of followers. In fact, you may have just such a class of patients as you wish, provided you are willing to comply with the natural conditions peculiar to each.

Provide for your declining years by laying something by each month, for the time will surely come, and sooner than you now believe, when your eye now so clear, will grow dim, and your hand now so firm, will grow unsteady. All this will surely be followed by the loss of your best patients. One after another they will leave you, no matter what position you have gained in your profession or how high you rank socially. It is the inevitable result of age. The saddest sight to me is that of a dentist, old, poor and forsaken; and there are many of them. Therefore, my young friends, I earnestly impress upon you to early form the habit of saving.

Maintain the dignity of your profession by upholding the code of ethics, for the principles and precepts therein embodied are the golden rules of conduct between members of the profession and toward patients. Too often, my young friends, will you be mortified and humiliated by the unprofessional conduct of those in the profession, who, though they may hold diplomas from respectable schools, still in heart and conduct are mere charlatans. There are two particular classes of those who always have done so much to degrade the profession and humiliate its honorable members. The first are outspoken, intruding themselves on public attention by flaring signs, and loud advertisements of painless operations and cheap work. These are the least harmful, because so readily recognized. The others possess an element of hypocrisy and cunning, with ambition to occupy prominent positions in dental societies. They are loud in their professions of loyalty to the best interests of the profession, and pretentious as to their professional and scientific attainments, while their egotism and cupidity constantly tempt them to prostitute their profession and position to personal and selfish ends. They are those who covertly secure interviews with reporters and write-ups in the daily journals, with caricature cuts of themselves to show the people how great they are. This latter class, not infrequently secure, by their diplomacy and cunning, positions as members of State boards of examiners, as managers and professors in dental colleges, although they cannot perform with skill and credit to themselves, the ordinary duties of a dental office. These, with all their pretentions, never add anything of permanent worth to dental literature. They are most dangerous and destructive to the best interests of dentistry. Do not fail to early recognize these parasites, and to consign them to their proper place.

Another general condition of success is that you must be progressive. Bear in mind that, as you leave the College walls you are just entering the real school of experience—a wider school of action and education hampered by no rules, and circumscribed by no boundary lines. Schools are not manufactories of men; they do not turn out a finished product with no need of polishing and no power of subsequent growth. If you start out with the impression that you are now proficient in the science of dentistry, you are foredoomed to failure.

And now, gentlemen, you may so employ your time that at the end of the next ten years you will be practically no further advanced than you are to-night. You may have gained a little skill in finger craft, but will have forgotten considerable of theory, so that upon the whole you will have made no real progress. Or, you may so employ your time that you may be a power in your profession, and merit the admiration of your friends. Familiarize yourselves with the constant and rapid advancement which is being made in every branch of dentistry. Begin at once to form the habit of reading carefully at least four of the leading American dental journals and one or two of the foreign issues. This will keep you in touch with the progress that is being made. Do not, as so many do, read only advertisements in the journals; or glance over a few of the illustrated contributions, but carefully read every article and make notes and mental comments on the best they contain. Of course there is much written in dental literature to-day that may not rank as of the highest order of scientific production, but even the chaffy, much padded articles may serve you a good purpose, for they will give you a firmer grasp on facts with which you are already familiar. You will find but few articles indeed which do not contain some points that are new and of real benefit, well worth the reading. Even if not strictly new, old truths may be presented in a way which will impress you as never before. I would advise you to carefully preserve each number of your journals, and at the end of the year have each volume bound. They will become as old friends, and will form an important part of your professional education. For there are two kinds of knowledge, that which we have laid away in the recesses of our memories and can recall at will, and that which we can recall but dimly, yet know where it is recorded and can turn to it in need. You cannot be progressive without books. I earnestly urge you to form the habit of collecting and carefully reading them. In a few years you will have thereby accumulated such a dental library as you will be very proud of, and one which will be of great value to you in many ways.

While I am discussing the matter of books of a special and merely technical nature, I cannot refrain from venturing upon one other phase of the subject, with the importance of which I am profoundly impressed. It is that of breadth, breadth social, breadth literary, breadth scientific. Do not limit yourself to the books or the reading bearing upon your profession alone; if you do, you will lack that breadth of knowledge which the dentist should possess. There is no class of professional men who ought to be so well informed, not only in matters pertaining to their own profession, but broadly, on social, scientific and general subjects of the day. One of the most serious hindrances to progress in dentistry has been this lack of liberal education. Indeed, so great has been the deficiency in this respect, that dentistry has only in late years been classed among the learned or skilled professions. Many young men, with only the most elementary education, have undertaken this branch of study and practice with a view solely to earning a living or accumulating wealth, and the result has been a lowering of the standard of the profession. It is for your generation, in this age of books, to elevate the profession to the high position to which it so justly belongs, and give it a rank second to none. As you enter upon your life work you will necessarily come in contact with men of high scholarship and refined, liberally educated ladies with whom you cannot hold social converse unless you familiarize yourselves with the standard literary works. Cultivate the polish of diction and the delicacy of sentiment found only in poetry and romance. Refresh your tired natures with the subtle humor and wonderful tenderness of sympathy to be found in Charles Dickens, with the grand sweep of moral and spiritual vision that illuminates the fiction of George Eliot, with the burning pathos of Victor Hugo. Enrich your minds with the classics of Gibbon and Motley, Prescott or Greene. Acquaint yourselves with the philosophy of Spencer, the science of Darwin and Tyndall, and the drama of Shakespeare and Moliere. Accumulate the library of the scholar, as well as that of the dentist. And do not pass unnoticed the fine arts, music, painting and sculpture. Perhaps you will say I am theorizing in this respect, dwelling in the realm of the unreal and the imaginary. Not so. Artists and poets of all ages have dwelt with lingering tenderness on the beauty of the human form and face. Some one has said that the eye is the window of the soul. Perhaps it is so; yet I question whether any one feature lends more of expression to the face than the mouth. If the flashing eye mirrors the feeling, so also do the firm, well-chisled lines of the mouth determine the character. It is yours to deal with the human face, and realize the possibilities of your art in this delicate and expressive feature. He who reads widely, thinks deeply, loves tenderly, and, in fine, knows most of the really beautiful in literature and art can best feel and reproduce. Therefore let me urge you to read widely, study closely, and come to feel the dignity as well as the usefulness of your profession as applied to the beauty, and, therefore, the happiness and self-satisfaction of your patients. If you think low thoughts you will have low ideals; if you think the high thoughts of the masters in literature and art your ideals and your work will be correspondingly of a high order.

In conclusion, I sincerely hope and trust you will ever cherish a kindly feeling toward your Alma Mater. For you will never know the amount of time that has been spent and the sacrifices that have been made in your behalf, or the strong interest your professors feel in your welfare. You can justly feel proud in the possession of a diploma from the American College of Dental Surgery. Under its present able management it has attained that remarkable growth which now places it among the foremost colleges of America. To possess a diploma from this institution is, and always will be, a passport to a successful practice.

In behalf of the President, Trustees and Faculty, I wish you all an honorable, successful and brilliant professional career.

EXTIRPATION OF THE DENTAL PULP BY THE USE OF COCAINE.*

BY MANNING A. BIRGE, D. D. S., GRAND RAPIDS, MICH.

When the pulp of a tooth becomes exposed, or nearly so, through the agency of caries, or any other reason, the duty falls upon the dentist to treat it in such a manner that subsequent trouble from it will be reduced to a minimum. The opinions of different operators vary as to the best method of accomplishing this end. There is a choice of but two methods, directly opposed, but both tend to the same end—the preservation of the tooth in a healthy and useful condition. The first method is by the operation of capping, and the second by the removal of the pulp.

The process of capping early came into use and was employed simply to protect the pulp from the pressure of the filling, by the use of a metal disc. "The germ theory of disease was then unknown, and it is not, therefore, remarkable that the efforts at pulp preservation usually ended in pulp destruction.'' (Truman, American System, Vol. i., 894.) As time progressed, the highly sensitive character of the pulp, and the germ theory being better understood, the metal cap gave way to the use of the cements, oxyphosphate, oxychloride and the like, combined with antiseptics and anodynes, to suit the individual likes of the operator; the idea now being to reduce inflammation and promote a secondary deposit of dentine over the pulp. Time has shown this treatment a failure in a large majority of cases, especially where capping has been used over pulps which have been so badly exposed as to become highly diseased. Dr. Truman says: "That capping can be made an invariable success must ever remain an impossibility. The delicate nature of the organ upon which we are called to operate, endowed, as it is, with sensory nerves inviting the inflammatory condition upon the slightest irritation—makes any treatment at once difficult and uncertain. Systemic peculiarities, the anæmic, the scrofulous, the syphilitic diatheses—all operate against a satisfactory prognosis; and so common are these antagonistic forces that it is somewhat remarkable that there has been any degree of success." (American System, Vol. i, 895.)

In summing up his chapter on "The Pathology of the Dental Pulp," Dr. Black says: "In the foregoing pages I have frequently alluded to the fact, which is apparent in a very large proportion of my microscopic preparations—that any of the secondary calcific formations within the pulp of the tooth result in exhaustion and final death of the pulp. This fact is so prominent that it seems to me that it cannot well be overlooked, and yet in the capping of exposed pulps it seems to have been the thought of the profession that to be able to obtain a secondary deposit under such circumstances was to insure the permanence of the health of the pulp. This was my own thought some years ago, but further clinical experience, combined with the closer microscopic study of the subject, has convinced me that this is a mistake. Secondary deposits may, and do, insure temporary quiet, but so far from insuring health are they that, as a matter of fact, they bring about the very state of matters that we most wish to avoid—the degeneration and final destruction of the pulp." (American System, Vol. i, 886.) On the next page he says: "Very many cases of capping pass on for years without any deposit whatever, and seem to remain in a perfectly healthy condition. This we must regard as the most desirable result that can be obtained." (American System, Vol. i, 887.) Thus we can see that the final result of capping is very uncertain.

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*Read before the Grand Rapids Dental Society, April 10, 1894.

In passing to the second method of treating pulps—the one diametrically opposed to that just given—I come closer to the subject, which you, undoubtedly, by this time think I have forgotten. Instead of covering the pulp over in this case, we are to entirely remove it. In this way there is no chance for it to become more inflamed and die—the danger lies in not thoroughly removing it from the canals.

The removal of pulps antedated capping, but the manner of removal was simply to tear it out with a hooked or barbed broach, or to destroy by actual cautery, either of which "was so barbarous in its infliction of pain that it is scarcely presumable that many submitted to it." (American System, Vol. 1, 899.) At that time arsenic for devitalizing, or the local anæsthetics as we have them to-day, had not made their appearance. Many preparations and combinations have resulted since the introduction of arsenic which aim to destroy sensation of the pulp, literally kill it; but even if it does it with the first application the pulp is in no condition for removal at once. It is still soft and congested, and any slight pressure is transmitted to the live tissue beyond, causing so much pain that it is necessary to seal glycerite of tannin in the canal for a couple of weeks, before any attempt can be made to successfully, painlessly and thoroughly remove it. Even then you may not be able to accomplish your object and further delay is the result. In the days of delay the dead or semidead mass may become infected, and the removal and the getting of the canals into a suitable condition to fill may be extended for weeks, even months.

I have placed before you a few facts concerning the other methods of treating the exposed diseased pulp, and I will now endeavor to draw a favorable comparison for the cocaine method of removal, which I firmly believe overcomes a good many of the dangers, difficulties and tedious operations of the old methods.

The more I used the arsenic pastes for destroying the life of the pulp, the more trouble I found it was, so when my attention was called to the extirpation by first injecting cocaine 20 per cent, I at once began experimenting with it. I soon found that a large part of the trouble with arsenic was overcome.

Having diagnosed an exposure of the pulp, first adjust the rubber dam, that from the start one may know just what he is doing. After thoroughly drying the cavity, wash it out with an antiseptic. I like an alcoholic solution of thymol, and wash the entire crown with it. It is quickly and thoroughly dried, the alcohol readily evaporating. All the soft decayed dentine can now be removed expeditiously, and with a small amount of pain. As the exposure is neared, put cocaine 20 per cent, or carbolic acid 95 per cent on the spot about to be exposed ; by so doing the exposure can be made a complete one with very little pain. A small exposure not larger than the hypodermic needle is better than a larger one. With the hypodermic syringe gradually inject or force the 20 per cent cocaine into the pulp chamber. At the first pressure there will be pain, but it is not severe, and will immediately cease. Force as much as is possible in and around the pulp. Using a blunt ended needle the pulp is not punctured, but the cocaine is forced around it and in it, undoubtedly to a certain extent. If the injection has been thorough the exposure can be enlarged until the pulp chamber is entirely opened without pain.

When the chamber is opened, so that a broach can enter the canal, take the largest size barbed Donaldson broach and forcing it into the canal as far as it will go, simply tear out the tissue by rotating it and also by working it up and down in the canal. This will be followed by considerable hæmorrhage. Generally before inserting the broach it is necessary to inject more cocaine, by placing the syringe needle as far up in the canal as is possible. I have in a number of cases removed the pulp from bicuspids and the anterior teeth with but the first injection; the majority of cases, however, need more. After using the large size broach, smaller ones should be used to make sure that the apex is reached. It will be found necessary from time to time, in the course of the operation, to wipe the canals out with cotton, which will remove the blood as well as loose particles of the pulp.

In the molars the operation is somewbat more complicated than in the anterior teeth, because it is hardly possible to extirpate the contents of the different root canals with one or two injections. I generally remove the bulbous portion of the pulp with a large bur, while opening up the chamber, and inject cocaine into the roots separately, though I had one upper molar which required but one injection. The small buccal canals, of course, are a source of trouble, but by being careful and using a small broach a large number can be cleaned, seemingly, thoroughly. Even if some tissue is left near the end of the canal I do not anticipate any trouble. The other part is simply torn from it and being in an antiseptic condition, filled with a nonirritating root filling, why should it not heal and remain alive? But there is not much excuse for leaving any tissue except in very small, tortuous buccal canals, or mesial canals of the lower molars, or canals of extremely crooked roots, if you use care. Then again it would be just as impossible to remove it entirely, under such exceptions, had the pulp been devitalized with arsenic; and I would much rather have a small amount of tissue left at the apex that had not been impregnated with arsenic, if indeed any has to be left.

It is quite difficult in distal cavities to remove the pulp by this method; but it is as hard by the other way. By having a curved hypodermic needle the injection can be made; the pulp chamber can then be well opened and the tooth cut so as to gain access to the canals without pain.

In two cases I have removed from badly decayed molars pulps which have had the tumorous like growths, so well known and so much dreaded by us all, with very little effort. In these I used a sharp needle and injected the cocaine into the pulp itself and succeeded with no pain in removing it. This was much more satisfactory than applying arsenic, which in cases like this always has so little effect.

After thoroughly removing the pulp the next step is to arrest the hæmorrhage, which in some cases is very excessive, especially if there is a large foramen, or if there is some tissue left inside the canal at the foramen. I have had some, that, after wiping out, have almost at once ceased to bleed; others have been very troublesome. When I first began to use this method, the arresting of the hæmorrhage caused me a great deal of trouble. I tried Robinson's remedy which acted well, though not entirely satisfactory; the tissue was liable to be sore and tooth would have to be favored in biting. I discontinued its use for either bleached tannic acid or a solution of tannin and alcohol, which latter I greatly prefer because of the ready evaporation of the alcohol. When the hæmorrhage stops wash out with peroxide of hydrogen and remove as much of the blood clot as is possible. In some cases the bleeding will begin again but with a few applications of the tannin and alcohol I have not failed to get the canal dry. In one of the first that I filled I could distinguish blood floating through the chlora percha. There has never been any trouble with it and that was a year ago last month. I saw the patient recently and no trouble has ever been experienced. I presume I started the bleeding by pricking the clot at the foramen with the broach in the operation of filling. As the blood was held by the chlora percha—mixed right into it—why should it cause any trouble?

In one case which was extra sensitive, as some are where the pulp has been very much inflamed I put oil of eucalyptus in for a few days, yet I prefer to fill at the same sitting. The tooth is a trifle sore sometimes for a few days, but if a good counterirritant is used on the gum over the root, before dismissing the patient there will be but little soreness. The longest time I have had patients complain of the tender feeling was four days. After filling the canals I wait a week if possible before filling the cavity permanently.

All the broaches, burs and whatever else is used in and around the tooth should be in an antiseptic condition before attempting the operation. In this way there is no danger of infection.

To the question of having a blood clot at the apex, for certainly there must be one there, I have given considerable thought, and I have come to the conclusion that there will be no danger from it.

By washing out with peroxide of hydrogen about all of it is removed from the canal itself, then the pressure of the gutta-percha filling will crowd what little there is so that there will be hardly any inside the canal. The clot is small, it is not infected by any germs and why can it not be absorbed naturally? There is certainly circulation sufficient in the so-called apical space to accomplish it. In this method we have the advantage of saving time, no tedious delay.

The canals, antiseptically clean are filled at once, sealing the tooth before germs can get in—thus danger from abscess is reduced to a minimum.

There is no saturating the tooth with any devitalizing agent—it simply is made pulpless—hence no danger of its changing its color.

There is no covering of a partially diseased pulp to eventually die, on the mere pretext of keeping the tooth alive. The theory that a tooth is entirely dead because the pulp is removed, has long ago been exploded.

There is no impregnation of the tissue with a poison like arsenic, which, being left in a number of hours, may pass through into the apical space and cause trouble; or may get out on the gums with bad results. True, cocaine, twenty per cent, is injected into the tissue, but there is none of it going beyond the apical foramen, because there is no chance—no delay at all. The opening up at once, and the tearing out of the pulp results in hæmorrhage sufficient to cause any excess of cocaine to run out with it. I have never had the least symptom of cocaine poisoning in any of the patients during the operations, and never expect to have with this treatment.

There is no tender part down in the canal, which, as frequently happens with arsenic, is almost impossible to remove, because the pressure gives so much pain—it is all paralyzed, and you have only to get it out.

If in small or crooked canals there is some tissue you cannot remove, it is not filled with arsenic or the like, hence if it is to abscess it will be delayed in doing so, because it is not yet dead.

Frequently we find in teeth of more than one root that the pulp in one may still have some life while the others are dead and causing trouble. By the use of cocaine this live tissue may be removed painlessly and expeditiously.

In some cases there will be pain, but very little if you are careful not to have too large an exposure for the first injection. I have had some where the canals were small and the pulp highly inflamed, and which seemed almost impossible to anæsthetize, and where there would be considerable pain; but these are exceptions, and I think perhaps I was not thorough enough in the first injection. If there are any calcific deposits within the pulp it will be much more difficult to produce anæsthesia of the entire pulp until they have been removed.

In conclusion I will say that it is now over a year since my attention was first called to this matter, and I have used it in almost every case since where removal of the pulp was necessary. I have yet to note a failure. Of course a year is hardly long enough to judge, nor the limited number of cases sufficient to prove any method of treating; yet I firmly believe in the operation, and time alone will tell whether or not the reaping will be a crop of abscesses.

SOME THOUGHTS ON THE BEHAVIOR OF GOLD UNDER THE PLUGGER.*

BY LOUIS OTTOFY, D. D. S , CHICAGO, ILL.

It matters little how much we may know about the quantities of gold that are brought to the light of day annually, or how its value fluctuates from time to time, or what its physical properties are, or how thin it may be beaten, or how it acts as a thermal conductor, if we did not also know how gold behaves under the plugger. From all that I can learn in our literature it seems that even the number which claims to know but a little about it, is small. There are, as in all theoretical fields any number of amateur farmers who are plowing, and think that they are even sowing, but those who do know anything about the subject are few indeed.

Recently a number of discussions on this topic have taken place; these contain the expression of the opinion of each individual unsupported by evidence, and in some instances based on grounds wholly incompatible with even what little there is well understood regarding the properties of the metal. For instance, the terms that gold, under the plugger, "spreads" or "crawls", are commonly used without any definite idea of just what they mean when used in this connection. It is useless to deny that gold, under certain circumstances spreads, and the example of what the gold beater can do is not only superfluous but entirely inappropriate for an illustration in connection with tooth filling. In the first place the gold beater has provided for the gold lateral space that it may spread; in the second place, he applies the force over the entire surface of the gold to be spread, that is, the face of his hammer is large enough to prevent the gold from coming up along side of it, for he compels it to go in the only direction in which there is no impediment, that is laterally, hence it is perfectly competent to say that the gold has been spread. There is skin above it, skin below it, hammer above and anvil below, resistance in all directions except lateral, as substance cannot be obliterated, and as the force applied from above is powerful, and the resistance from below equal, the gold can do nothing else but spread, and therefore, it is claimed that because it behaves thus in the hands of the gold beater, ergo, it must do likewise in the hands of the dentist. The conditions should be analyzed and the differences noted. In the case of the dentist, it is true that we have for the purpose of applying force a steel instrument, but for resistance we do not have a substance corresponding to that used by the gold beater. In other words, aside from the fact that dentine, enamel and tooth substance generally are incapable of offering the same resistance that the steel anvil would, we must also bear in mind that the tissue is imbedded in living substance, and in a cushion which admits of a certain amount of rebound. The gold spread by the gold beater is placed between two smooth membranes, and these permit the particles of gold to move laterally without being obstructed in that course when the force of the hammer is applied. The substance corresponding to the plugger point in the gold beater's case is the smooth animal membrane, while the side corresponding to the cavity of the tooth, or to the already impacted gold, in the case of the gold beater is also a smooth substance. What reasons then are there for the statement which I wish now to make that the dentist should expect nothing from the spreading quality of gold? In the first place the surface against which he builds, is as a general rule a rough one; this must, as a matter of course, act as an impediment to the lateral movement of the gold particles. Then also, the surfaces with which he applies the force, namely the serrated plugger points, instead of permitting the gold to spread, the roughened points catch the gold and hold it into place so that it cannot spread; in the third place, instead of applying the force with something that is as large as the gold about to be condensed, or even larger, it is considerably smaller; and it is no doubt this fact which has originated the term "crawling," as applied to the behavior of gold under the plugger point. The thought that a particle of gold can be placed into some inaccessible corner of a cavity, and then by constant malleting in that direction be caused to spread itself into any part of that cavity not directly accessible is a delusion. Force from a plugger point will be expended in the direction in which it has been given its impetus and none other, the law of physics governs that point beyond the intervention of any theory of ours. Instead of gold spreading then under the plugger, I have cited to you reasons, why identically the opposite is true, that is, that every act of ours impedes the lateral extension of the gold, hence my conclusion that to hope for even the faintest result from that kind of a theory is hoping in vain.

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Regarding the term "crawl," which I have mentioned and which is used in the vocabulary of dentists as if it was perfectly understood, I might say that it has no doubt had its origin in the notice that was taken of the action of gold under the plugger, when a piece larger than the point of the plugger was applied, and force exerted, the gold instead of moving away laterally, followed the direction whence the force was applied to a portion of that particle, acting somewhat on the principle of rebounding. So that when that much of the condensation of gold has been accomplished every part of the gold that has "crawled" up must be treated likewise until the entire surface has been gone over; nor is it prudent to pass over any portion of the gold without condensing it by the application of direct force, either by hand pressure or the mallet. The fact that the gold will curl up along the side of the instrument should be especially borne in mind when the plugger is following up along the margins of the cavity, for the slightest particle of that gold, a particle that may be invisible to the naked eye, which has not been sent home by a direct blow or pressure, will move away from the wall of the cavity, from that very vulnerable point, for whose protection the filling is being introduced.

These processes can be watched and noted with a good deal of interest and benefit under magnifying glasses. It will then be noticed that gold packs differently against a smooth than against a hard surface, that the only way to spread gold under a plugger is to make the surface perfectly smooth, then apply gold, using a smooth pointed plugger, the smooth gold acting as a resistance will permit the added gold to be spread or beaten out if you please, it will also be observed that it cannot be made to unite with the polished surface under the pressure possible to be applied in practice.

It is my purpose therefore to caution against what I believe to be a too universally accepted quality of gold, that of spreading under the plugger point. Clinically and theoretically gold spreads; practically, in filling it does not. The safer and better way is to get direct access to all parts of a cavity, where that is possible, or to use hand pressure where it is impossible to make the impact of the instrument on the gold directly in the direction in which it is desired.

OPERATIVE TECHNICS.

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CONTINUED FROM THE APRIL REVIEW, PAGE 235.

STEEL, ITS COMPOSITION AND PROPERTIES.

1. If the working of steel and the manufacture of instruments is comprised in the course in metallurgy, instruction in the operative technic laboratory may be confined to pointing, tempering and finishing of instruments, and the making of canal explorers and pulp extractors. This practical work should be supplemented by a study of the division on steel of either Essig's Metallurgy or Kirk's Metallurgy in the American System of Dentistry, with a didactic review and recitation, after the following syllabus:

STEEL.

Definition, "an alloy of iron with a small per cent of carbon." (Malleable iron also contains carbon.)

Specific gravity 7.893 to 7.736.

Melting point 3272, F.

Steel is capable of being hardened and tempered; iron is not.

Mild steel—that contains 0.15 or less per cent of carbon.

Hard steel—that containing 0.5 to 4 per cent of carbon.

Mild steel is capable of but little temper.

Hard steel is capable of much temper.

Instrument steel contains about 2 per cent of carbon.

Steel is hardened to its limit by heating to redness and immediately plunging in cold water. The more carbon it contains the harder and more brittle it becomes.

Hardened steel may be "let down," or tempered, by heating to a lower temperature and plunging. Plunging in oil gives a tougher temper than plunging in water.

Steel may be softened or annealed by heating to redness and cooling slowly; extreme softness is attained by excluding the air during the cooling process.

If overheated, steel becomes blistered, burnt and brittle—incapable of receiving a fine temper.

Instruments for different uses require different degrees of hardness.

Color indicates the degree of hardness.

Illustrate by holding a small rod of *polished hardened* steel in the flame until the various shades, from deep blue to faint yellow, appear; then plunge. The result will appear as in Fig. 11.

For the various dental instruments the temper as indicated by color should be as is shown in table opposite Fig. 11.

PRACTICAL EXERCISES.

Filing. Make of piano wire several very small and medium canal explorers, with long taper; on a part of these turn hooks for pulp extractors. To do this, hold them in a horizontal position on the anvil, covering one-eighth of an inch of the point with the large blade of a penknife, having the edge of blade toward large part, or handle, of the explorer. If the blade is held firmly against the anvil, and the handle of the explorer elevated to a perpendicular position, the point will be turned at right angles with the rest of the instrument. It may then be ground to the proper length. If desirous that the point or hook be at an acute angle with the long axis of the instrument, the instrument should be carried further in the turning process. The result will be as in Fig. 159.

Annealing.—Draw the temper in two excavator blanks by heating to redness and cooling slowly. Draw the temper in six Swiss broaches by laying on a plate of iron and heating to redness, allowing them to cool slowly. Draw the temper in six more by laying them on the iron and covering with plaster Paris or pulverized pumice, heating them to redness and allowing to cool before the covering is removed. Those annealed by the second process will be softer and tougher than those treated in the manner first described.

Shaping.—From one of the excavator blanks provided, shape, by cold hammering and filing, a small scaler same shape as Figure 77, length of blade $\frac{1}{8}$ inch, width of each side of blade at base of blade $\frac{1}{32}$ inch.

From another blank, by the same process, shape a chisel excavator like Figure 12, each side or edge of blade to be $\frac{3}{32}$ inch long.

Polishing. Remove all file marks and polish with emery paper of increasing fineness.

Hardening. Coat with soap; carefully heat to redness and plunge in cold water slightly acidulated.—Again polish.

Tempering. To prevent too sudden a loss of hardness, place point of blade in contact with the face of a small hammer. Hold shank in the flame until the proper colors appear, then plunge quickly in oil.—Polish.

Sharpening. A keen edge should be given on a fine Arkansas stone; be careful to preserve the proper bevel.

The above comprises the practical work, and while not interfering with any fuller course which may be given, it enables the student to repoint any cutting instrument and to keep himself supplied with canal instruments. It also relieves the tedium of the large amount of didactic work necessary in this division.

CLASSIFICATION OF INSTRUMENTS.

(Blackboard Diagram.)

- Instruments.
  - Cutting Instruments.
    - Instruments for the preparation of cavities and removal of deposits.
      - Chisels.
      - Excavators.
      - Lancets.
      - Scalers.
      - Drills.
    - Instruments for finishing.
      - Files.
      - Saws.
      - Trimmers.
      - Grinding instruments.
      - Smoothing instruments.
      - Smoothing materials.
  - Condensing Instruments.
    - Instruments for introducing and condensing filling materials.
      - Pluggers.
      - Burnishers.
      - Spatulas.
  - Explorers.
    - Cavity.
    - Canal.
  - Miscellaneous Instruments.
    - Broaches.
      - Smooth.
      - Barbed.
      - Hooked.
    - Clamps.
      - Rubber dam.
      - Matrix.
    - Separators.
      - Wedge.
      - Traction.
    - Mallets.
      - Hand.
      - Mechanical.
    - Adjuncts.
      - Matrices.
      - Wedging materials.
      - Ligatures.
      - Rubber dam and materials for excluding moisture.
      - Absorbents.
      - Mirrors.
      - Pliers.
      - Scissors.
      - Syringes.
      - Cheek and Tongue holders.

CUTTING INSTRUMENTS.

Dental instruments for cutting are analogous to such mechanical tools as the axe, chisel, knife, saw, file, and grinding wheels. As chisels, excavators, lancets, and scalers are similar in their form and action, they may be considered together. Each of these instruments has three distinct parts—the blade, the handle, and the shank. The blade is the acting part, that portion which cuts or scrapes. The handle is that portion held in the hand, by means of which the blade is manipulated. The shank is that portion which connects the blade and the handle.

Blades. These are of two forms; one having the bevel all on one side, Fig. 13, d; the other having an equal bevel on both sides, Fig. 14, d. The advantage of the double bevel is that both sides cut equally well; this is not important in instruments whose blades are on a line with the handle and shank, Fig. 13; but in those in which the blade is beveled as in Fig. 15, or in those in which the blade is at an angle with the axis of handle and shank, as in Figs. 14 and 16, it may be employed to obviate the necessity for two instruments. The length of bevel or angle of the cutting edge may be ascertained by placing the edge of the blade at the center of a circle which is divided as in Fig. 17. With one side of the blade upon the line drawn perpendicularly through the circle, the figure on the periphery of the circle on the line which follows the other side of the blade, will indicate in degrees the angle of the cutting edge. Fig. 17 a. Given the desired bevel or angle of cutting edge for any blade, it may be ascertained when it is correct in the manner just described. The length of bevel, or thinness of edge, is governed by the hardness or resistance of the substance to be cut, and whether the substance is to be "split" or "shaved." Enamel instruments need a stronger blade and shorter bevel than those for cutting dentine.

In chisels for direct cutting, *i. e.*, where the force may be delivered direct from the hand or mallet to the point to be cut, Fig. 19 b, the blade is on a line with the axis of the handle and shank, and the cutting edge is at right angles with this axis, Fig. 13. When the point to be cut is not accessible to direct force, *i. e.*, where the force must be delivered from a point represented by Fig. 19 c, while the blade is still on a line with the axis of the handle and shank, the cutting edge may be at an oblique angle, Fig. 20; or rounded, Fig. 21; or have three cutting edges, Figs. 22 and 23. If the cutting is to be in a groove or fissure, the blade may be shaped as in Figs. 24, 25, and 26. If the force must be delivered from a point indicated by d, Fig. 19, the blades must be at an angle with the line of axis of the handle and shank. Figs. 27 to 31. The *degree* of angle may be determined by placing the central axis of the shank upon the perpendicular line drawn through the circle, with the center of the angle, or junction of the shank and blade at the center of the circle. The figure at the periphery of the circle on the line which passes through the central axis of the blade will show the degree of the angle. Fig 18.

While the blades of chisels and excavators do not differ materially in form, excavator blades are smaller. They are used *inside* of cavities, and there is always an angle between the blade and shank, or an angle or curve in the shank. Angles and curves between blades and shanks, and in shanks, are for the purpose of bringing the blade into direct action upon surfaces which are inaccessible to straight instruments.

Handles. These are largely a matter of taste and individual convenience. They should have sufficient length to accommodate the hand. The handles of instruments designed for delicate work and which are held as a pen is held, should be small, while those of instruments for heavier work which are manipulated by a full hand grasp, should be larger. Where a large handle is desired and weight is an objection, wood may be used. Socket handles which will carry any form of point are a great convenience to the student. The several styles in both steel and wood, together with the two sizes of shanks designed for use with them, are illustrated in Figs. 32-39.

Shanks. The taper from handle to point is for the better balancing of the instrument as well as giving lightness and delicacy. The angles and curves which occur in shanks, or between them and the blade, will be shown in illustrating the more complex forms of excavators.

Excavators. There are three primary forms: the hatchet, in which the *width* of the blade is in line with or parallel to the axis of handle and shank, Figs. 40-44; the hoe, in which the *width* of blade is at right angles with the axis of handle and shank, Figs. 45-48; the spoon or scoop, whose blade, in the simple forms, bears the same relation to the axis of the handle and shank as do the blades of the hoe; the blades of this form are either round, pear-shaped or pointed. Figs. 50-52. From the great variety of complex forms of curves and angles, only the chief types will be noticed, showing first the single instruments, Figs. 53-61. Those for lateral cutting, which come in pairs, rights and lefts, are shown in Figs. 62-68. All round pointed or convex edged instruments are used where a concave surface is desired. All square pointed instruments are used where angles are necessary.

Lancets are designed for the cutting of the soft tissues, for severing the attachment of the gums at the gingival line, prior to extracting; for making incisions for the escape of pus in alveolar abcesses, and in all operations involving the cutting of the soft tissues. The blades are of the knife form, having a very acutely beveled, thin keen edge. The shanks are seldom curved, and any angles between the shank and the blade are governed by the same laws as those governing chisels and excavators. The typical forms are illustrated in Figs. 69-71. The handles, preferably of ebony, bone or ivory, are shown in Figs. 70-71.

Scalers. These instruments are designed for the removal of hard deposits upon the teeth. The blades are similar to the chisel and the chisel form of excavator. The angles and curves of these instruments are also governed by the same laws as those governing chisels and excavators. The principal types are illustrated in Figs. 72-81. Those shown in Figs. 72-74 are designed to be used with a pushing motion in the removal of deap-seated calculus from the roots of the teeth. Fig. 75 is for the same purpose, but is used with the pulling motion. Fig. 76 is also for the same purpose and can be used both to push and to pull. The remaining numbers are for the removal of the heavier deposits about the necks and upon the crowns of the teeth; some of these, notably Figs. 77 and 78, are useful in opening cavities and trimming enamel margins.

Drills. These instruments are now seldom used except in the dental engine. In the technic laboratory they are used in a revolving head socket handle. Fig. 82. The Century Dictionary gives under the definition of "drills" not only "dental burs" but all side cutting instruments or "reamers"; under a finer definition we may consider drills as instruments for boring holes, and reamers, or side cutting instruments, as agents for enlarging openings already existing. Many dental burs have the ability to act both ways. The instruments shown in Figs. 83-86, designed for working in root canals, illustrate these three types. Fig. 83 is a drill, Figs. 84 and 85 are reamers. Fig 86 is both drill and reamer. The various forms of drills are illustrated in Fig. 87. The several forms of cavity burs are seen in Figs. 88-96. The round, Fig. 88; the oval, Fig. 89; the pear, Fig. 90; the bud, Fig. 91, and the pointed fissure, Fig. 92, belonging to one family, and cut the same, *i. e.*, leave the same kind of surface, as convex edged, round or pointed, spoon excavators. The cone, Fig. 93; the inverted cone, Fig. 94; the wheel, Fig. 95, and the square or flat end fissure, Fig. 96, are of another family, and may be used for the same kind of cutting as the square end excavators, *i. e.*, where plane surfaces and angles are required.

INSTRUMENTS FOR FINISHING FILLINGS.

Finishing Burs. These are of the same forms as cavity burs, but are larger and finer cut. They are, in fact, single cut, revolving files. There is a newer form which is double cut, made in two forms, round and pear-shaped, Fig. 97.

Files. The file is a tool too well known to need special description. The introduction of the dental engine, with its diverse armament of burs, has almost entirely abolished the use of files except for the finishing of fillings. The separating file is still useful in some forms of cavity preparation. The so-called "flexo files" are the favorites, being sufficiently soft to bend without breaking. The "flexo" separating file is shown in Fig. 98.

The chief use of the finishing file is at the cervical margin of fillings on the proximate surfaces. Those known as file trimmers are made with handles similar to those of excavators and scalers, Fig. 99. Those known as files have handles like the "flexo" finishing file shown in Fig. 100, or like the one shown in Fig. 101. Many are made double end, Fig. 102. Of the many forms only a few of the most useful will be illustrated, Fig. 103.

Saws. These are used in separating and in trimming the cervical margins of fillings. They are generally used in a frame, Fig. 104, and are made with teeth on one edge, Fig. 104 a, or with teeth on both edges, Fig. 104 b. Flexo files are also made for the saw frame.

Trimmers. These instruments are designed for shaving or paring the surfaces of proximate fillings. They have very thin lancet-like or chisel-like blades. The chief forms are seen in Fig. 105. The sickle scalers, Fig. 77, if sharpened, make very effective trimmers.

Grinding Instruments. These are in the form of wheels, disks and points. Wheels are simply small grindstones, of varying thickness, varying in diameter from one-fourth of an inch to an inch. The great variety of disks and points are shown in Figs. 106 and 107. They are made of corrundum, Arkansas, Scotch and Hindostan stones, and of copper charged with diamond dust.

Corrundum is the native crystalline oxide of aluminum; in hardness it ranks next to the diamond. The purest forms of corrundum are the gems, sapphire, Oriental amethyst, ruby, and Oriental topaz. It is the darker, opaque varieties which are pulverized for grinding purposes. In the ordinary corrundum disks and points it is combined with shellac, while in the hard rubber and corrundum combination it is incorporated into the rubber before vulcanizing. A newer form is "carborundum," which, being vitrified, cuts well and wears slowly.

Disks and points of Arkansas, Scotch and Hindostan stones are used in the finer grinding for finishing enamel margins and fillings. The copper and diamond disks and points are used in separating, cutting enamel, and finishing fillings. Disks are made of emery, sand, garnet, and cuttle fish paper. All but the cuttle fish, which is very fine, grade from coarse to fine. Disks of these materials are of three forms: plain, depressed, and safe center, Fig. 108. The last two are in three sizes only, while the plain ones range from three-sixteenths of an inch to an inch in diameter. Cloth and paper strips of the same grits as those on paper disks, are used for finishing the proximate surfaces of fillings. Short pieces of these strips are used in a porte for the engine for polishing other surfaces, Fig. 109. Disks for carrying such polishing powders as pumice, silex, chalk, oxide of tin, and rouge are made of celluloid, felt, and soft rubber. Points for the same purposes are made of wood, leather, felt, and soft rubber. These are useful in polishing teeth and fillings. Instruments for carrying disks and points are illustrated in Fig. 109½.

INSTRUMENTS FOR INTRODUCING AND CONDENSING FILLING MATERIALS.

Spatulas. These are defined as instruments "having broad, flat blades with unsharpened edges, used for spreading, smoothing, scraping up, or stirring substances." In operative procedure they are used for mixing cements, introducing the mass into the cavity, and smoothing the filling. With the addition of a round point, a ball end point, and a lancet trimmer, cements may be manipulated entirely with spatulas, or spatula-like instruments. The different forms are illustrated in Figs. 110-113. The ball end and the round points are shown in Figs. 114 and 115. Some forms of noncorrosive instruments, made of platinum, are seen in Figs. 115-117.

Pluggers. This is the name given to instruments for the condensation of gold and other filling materials. Condensing instruments are for the purpose of conveying force or impact from the hand or mallet to points inaccessible to the hand or mallet. The solidity, homogeneity, or density of fillings is attained in one of three ways. By introducing the material in a plastic condition and allowing it to harden ; by wedging or interweaving folds or rolls, made from very thin sheets of metal ; or by welding small pieces of metal together in the cavity. Each of these methods requires instruments peculiar to itself.

Instruments described for the introduction of cements with the addition of the serrated points, Figs. 118 and 119, comprise the necessary forms for the introduction of amalgam, guttapercha and zinc plastics.

Tin and noncohesive gold are introduced by wedging or interdigitation ; instruments must have wedge-shaped points, and all serrations must be sharp and deep. In Figs. 120-129, are shown the several forms of points, also the angles and curves in the shanks which are necessary to bring the points into direct action upon all surfaces. These instruments are used chiefly by hand pressure.

Cohesive gold is introduced in small pieces, welded, or fastened together in the cavity. To accomplish this, the points of instruments must have "faces," which will bring the surfaces of the gold into *perfect contact.* These faces are either flat or convex, with fine, shallow serrations. Pluggers used with the mallet have handles like Fig. 130. The faces have various outlines, circular oval, square, oblong, pear-shaped and triangular. The points are plain, as illustrated in Figs. 130–132, or foot-shaped, as in Figs. 133–138. The shanks of pluggers have various styles of curves, the single curve, Fig. 132, the bayonet, Fig. 127, and the corkscrew, Fig. 129.

Curves in the shanks of pluggers are for the same purpose as in other instruments, *i. e.*, to bring the point into direct action upon surfaces inaccessible to straight instruments. Angles in shanks do not divert the force. If a plate of steel, shaped like Fig. 139, is struck with a hammer at A, or at any point on the end between A and B, the force will be delivered from C, in the direction indicated by the arrow, *i. e.*, on a line parallel with the long axis of the figure. If portions of the plate, E and F, are cut away, leaving D, D, D, the result of a blow at A, will be the same as before, provided there is no spring in the angles. The law of force, as applied to pluggers, is, that whatever the curve or angle in the shank, the force is delivered on a line parallel with the long axis of the instrument, provided that the *face* of the point is at *right angles* to this axis. Force is delivered at right angles with the face of the instrument. If two perfect spheres, A, are placed upon a smooth plane surface, Fig. 140, and struck simultaneously with the end of an oblong figure, B, they will roll along the dotted lines c. c. The same spheres struck with a wedge-shaped figure, Fig. 141, will travel along the lines c. c., *i. e.*, at right angles to the surface that struck them. If the spheres are struck with a disc, B., Fig. 142, they will travel along the lines c. c. at right angles to the surface at the point of contact.*

From these illustrations the conclusion will be readily drawn that when spreading of the filling material is desired, a *convex* surface is preferable to a flat one. In Fig. 143, is shown a ball end plugger with serrations running over on the side; a sectional outline is represented by B, Fig. 142. This instrument is not only effective in spreading the gold, but its spherical form enables the operator to deliver the force in any direction he desires simply by bringing different points of the face in contact with the surface of the filling.

In Figs. 144-146 are shown three bayonet pluggers with triangular foot points, having convex faces, serrated longitudinally only. They are designed for matrix fillings in disto-occlusal surfaces of bicuspids and molars, the pointed foot making it easy to carry the gold well into the joint between the matrix and the margin of the cavity.

Burnishers. These instruments, made of steel, agate and bloodstone, are used in spreading and smoothing metallic fillings, also in the insertion and adaptation of cement, gutta-percha, and amalgam. The various forms are shown in Figs. 147-152. Burnishers are hand instruments, but they are also made for use in the engine.

MISCELLANEOUS INSTRUMENTS.

Explorers. Cavity explorers are for searching out cavities in the teeth, and should be of a spring temper with very delicate points. The most useful forms are shown in Fig. 153. Canal explorers are delicate, pointed instruments with a long taper. An exceedingly delicate form called a bristle, mounted in an ebony or rubber handle, is very useful in following intricate canals, Fig. 154.

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* NOTE.—The author is under obligations to Dr. E. A. Royce for the suggestion of the illustrations of force, as shown in Figs. 139-142. Dr. Royce is also the designer of the ball end pluggers illustrated by Fig. 143.

Broaches. The instruments described as canal explorers are also known as smooth broaches. Another form, Swiss broaches, are square and hard tempered. When the temper is drawn they are useful in carrying medicaments and wiping canals; their square form making it easy to cover them with cotton.

Barbed broaches are those which have a row of barbs on one side, Fig. 156, and one of a different style of barbs in Fig. 157. Hooked extractors have been noticed in the practical work; Fig. 158 showing the form of the ones manufactured by the students, while Fig. 159 shows another form. All small canal instruments are more easily manipulated if they are inserted in small handles like Fig. 154, or in broach holders, Figs. 160 and 161.

Clamps. Rubber dam clamps are designed to hold the rubber dam in position on teeth where simple ligatures will not retain it. They are made of thin spring steel, in many forms, and are applied by means of forceps designed for that purpose. Figs. 162-165 show four clamps which are a very satisfactory selection for students. Figs. 162 and 163 are molar dip clamps, right and left; the dip flange carries the rubber below the cervical margin of buccal cavities. Figs. 164 and 165 are irregularity clamps, right and left, and are to be used on bicuspids or third molars.

Matrix Clamps. These are for the purpose of holding a thin strip of metal in position around a tooth having a mesio-occlusal or a disto-occlusal cavity, for the purpose of converting it into a simple cavity and shaping the proximate surface of the filling. They are of two forms, the spring and the screw clamp. Fig. 166 illustrates the spring and Figs. 167 and 168 show the screw.

Separators. The general rule is that in proximate cavities, space for filling should be gained by cutting, and space for finishing should be gained by wedging, separating sufficiently to permit the manipulation of disks or strips. The simplest way to accomplish this is with a wooden wedge, or a block of wood, inserted to hold the space which has been gained by forcing between the teeth to be separated, an instrument like Fig. 169, but the operation may be performed with less pain by the use of one of the screw separators. These are of three kinds; those which wedge or force the teeth apart by the approach of two points, Fig. 170; those which draw the teeth apart by the separation of two pairs of points, Fig. 171, and those which act in both ways, Fig. 172.

Mallets. Hand mallets are made of wood, steel, lead, and many other materials. The handles are long or short, round or flat, as the operator may fancy. The author, however, has found most satisfactory to both operator and patient, a mallet of lead in a brass case, having the ends covered with leather, and a handle similar to those in riveting hammers, Fig. 173.

Mechanical mallets are of four kinds: the pneumatic, in which the blow is delivered to the end of the plugger by a loaded piston projected by the sudden pressure of air; the electro-magnetic, in which the end of the plugger is struck by a hammer operated by the opening and closing of an electric circuit; the mechanical, in which the blow is delivered by a rapidly revolving disk having a hardened steel projection let into its rim; the automatic, in which the blow is delivered by releasing a spring. The last form is now made double end, to operate either a direct or a return plugger, Fig. 174. The one which delivers a blow most resembling that of the hand mallet is the pneumatic.

ADJUNCTS.

Matrices. These appliances are of various forms from the simple slip of polished metal, held in position against the margins of the cavity by a wedge, to the continuous band with its several methods of adaptation. Matrices are of three forms; those occupying but one interdental space, depending upon the presence of an adjoining tooth for their retention, Figs. 175-177; those occupying but one interdental space, not dependent upon an adjoining tooth for retention, which partially encircle the tooth and are retained by the spring or screw clamp, as shown in Figs. 166 and 167, and those which occupy two interdental spaces, that are tightened about the tooth by the various devices shown in Figs. 178-180 and in Fig. 168. The slips or bands of metal forming the matrix are of varying composition, form and thickness. The general rules are, that the material should be either steel or German silver, highly polished, thin enough to be readily adapted, not occupy too much space, and of such shape as to insure perfect adaptation, and give to the completed filling the desired contour.

Wedging materials. For slow wedging in those cases where space for operating must be gained, some material which is capable of expansion should be inserted, increasing its bulk from time to time, until the space is sufficient. The materials employed are dry wood, cotton, and rubber.

RUBBER DAM AND MATERIALS FOR EXCLUDING MOISTURE.

For short operations teeth may be isolated and protected from the saliva, by surrounding them with small napkins properly folded or rolled, cotton rolls, or some of the paper or cottonoid preparations. For more protracted operations rubber cloth of medium thickness should be used. In its application, the teeth to be isolated are passed through round holes, formed with a punch, and the edges of the rubber encircling the teeth turned rootward. If the teeth are conical or if the tissues exert a contra pressure the rubber is held in place by ligatures or by the steel clamps.

Ligatures. That the gums may be injured as little as possible, and that the ligature shall not be in the way, the ordinary knitting silk is used for the retention of the rubber dam. Floss silk, hemp thread known as "gilling twine," and small sea grass fish line are sometimes used; the last being very efficient where much strength is necessary, as in regulating.

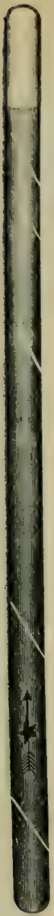
Absorbents. Cotton prepared in such a manner as to absorb moisture readily, spunk, and a thin absorbent paper known as "bibulous paper," are the chief agents used for wiping and drying the surfaces of the teeth, and cavities.

Mirrors. Mouth mirrors are used for reflecting the light into cavities and for showing cavities upon such surfaces as are out of direct line of vision. Those which magnify concentrate the light and enlarge the reflected image, so that by their use operations are performed with less eye strain.

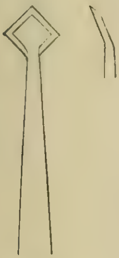
Pliers. Instruments known as foil carriers and dressing pliers are the only form of pliers which will be noticed here. They are not only for conveying gold to cavities but for all small objects which are handled in operating, and carrying cotton charged with various medicaments. For this last purpose one pair made of non-corrosive metal should be provided.

The various other adjuncts in the operative armamentarium will not be noticed in this course except as they appear in some of the procedures treated in other divisions.

[TO BE CONTINUED.]


Pale Yellow.. { Enamel Chisels. Burnishers.
Full Yellow.. { Excavators. Sealers.
Brown.........Pluggers.
Purple....... { Shanks of Instruments. Saws.
Blue...........Spring Temper.

11



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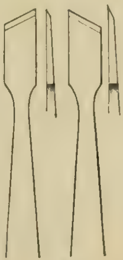

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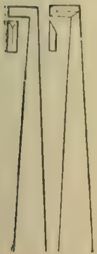

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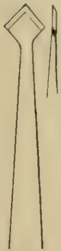

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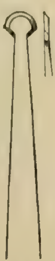

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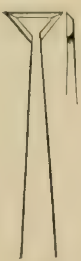

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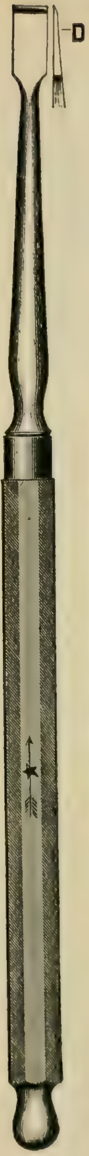

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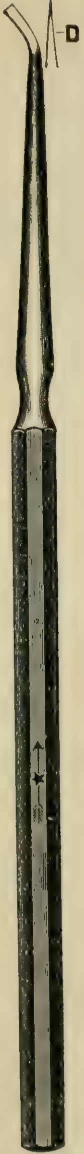

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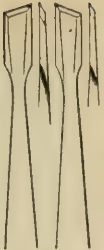

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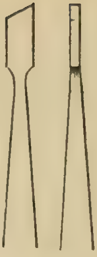

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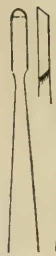

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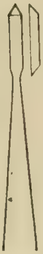

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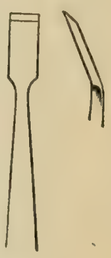

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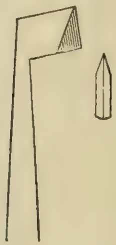

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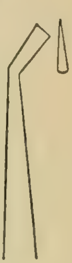

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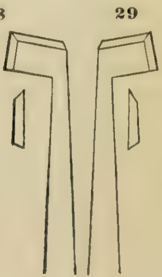

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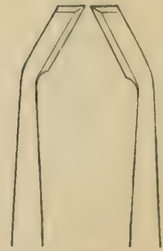

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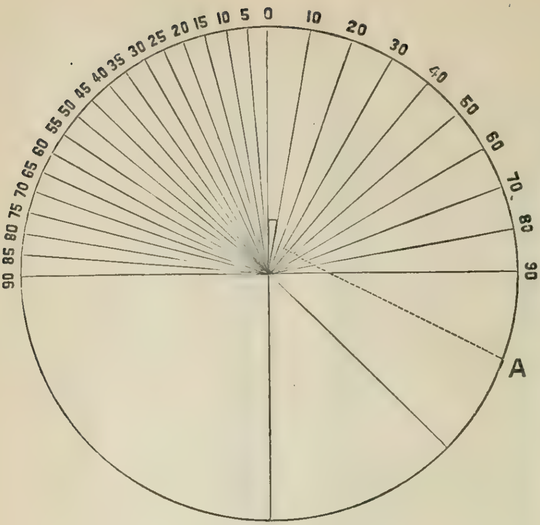
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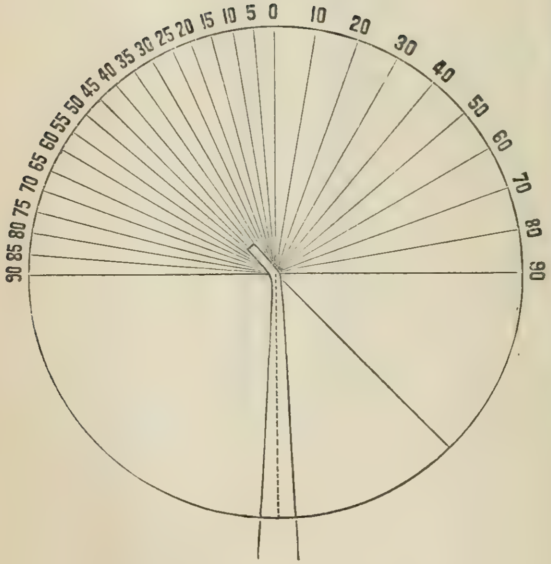
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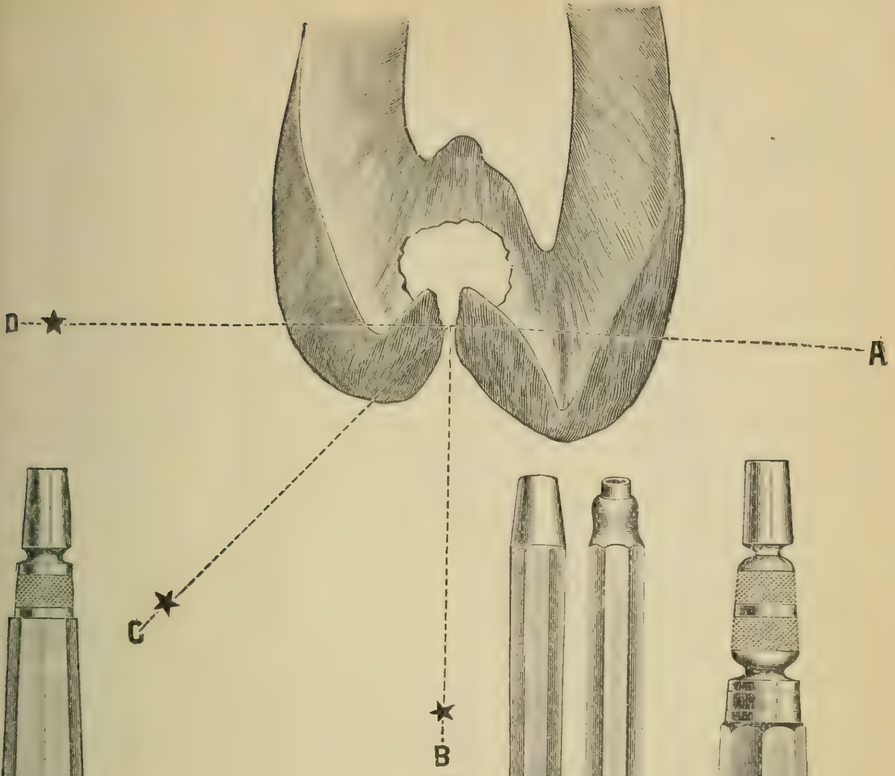

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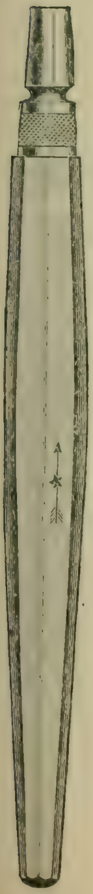

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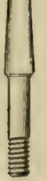

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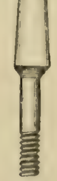

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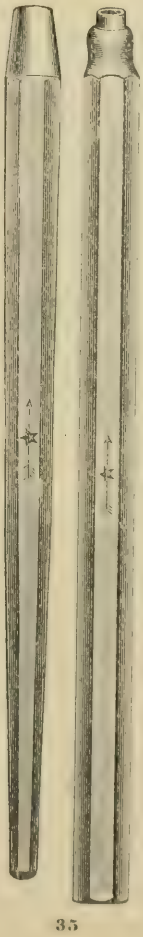

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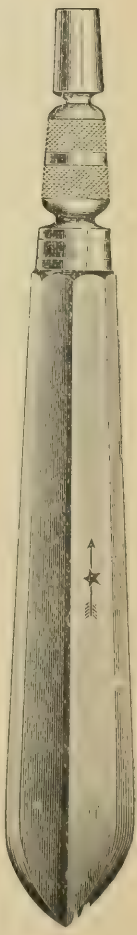

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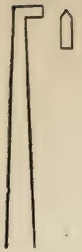
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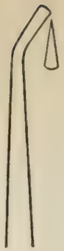
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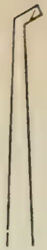
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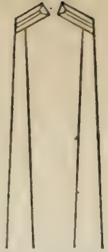
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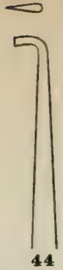
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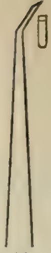
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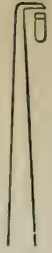
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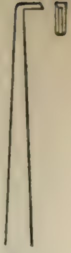
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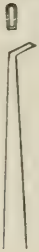
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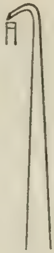
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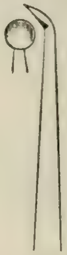
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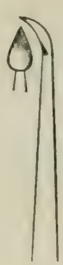
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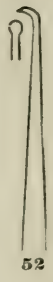
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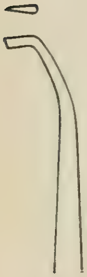
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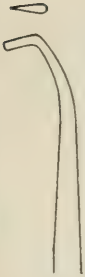
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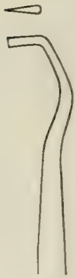
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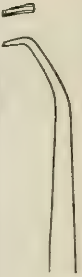
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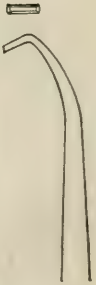
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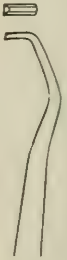
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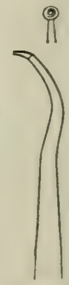
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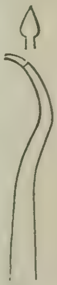
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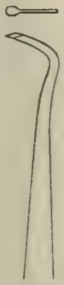
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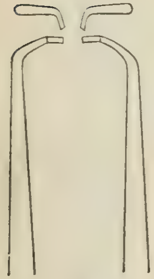
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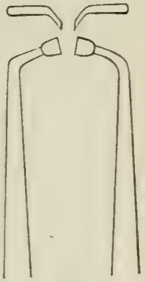
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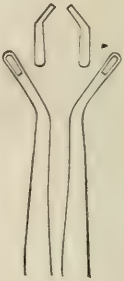
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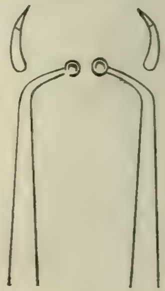
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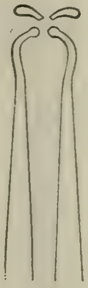
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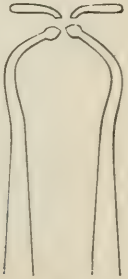
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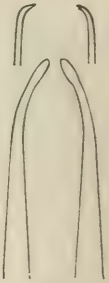
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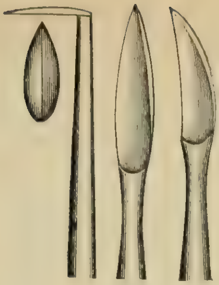
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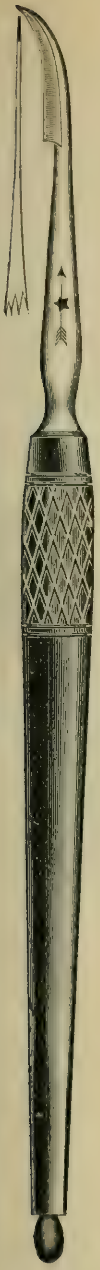
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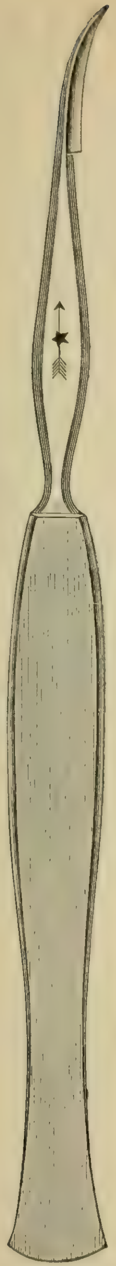
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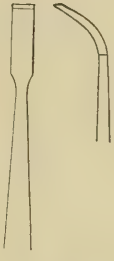
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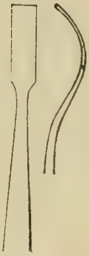
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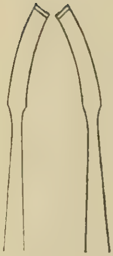
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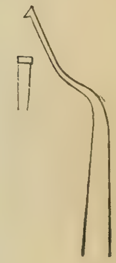
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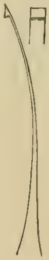
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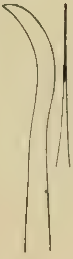
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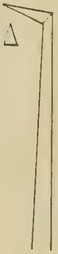
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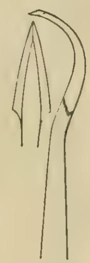
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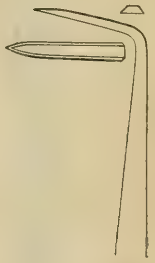
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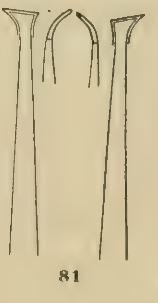
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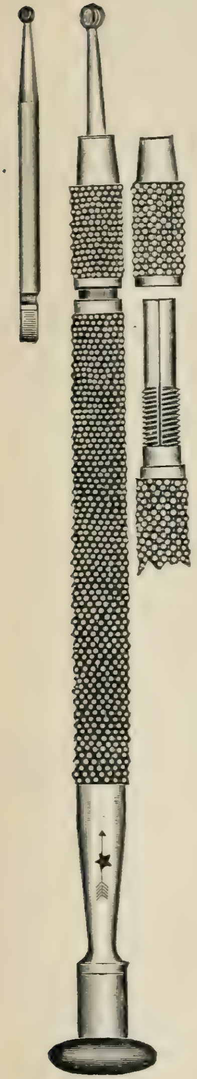

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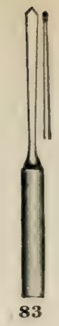

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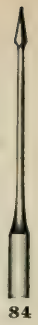

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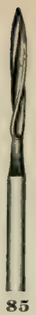

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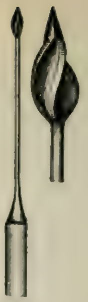

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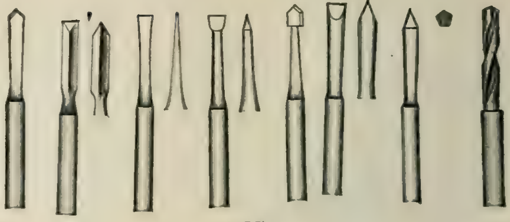

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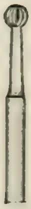

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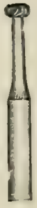

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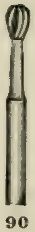

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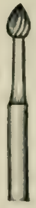

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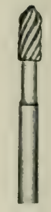

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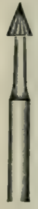

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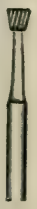

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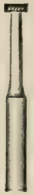

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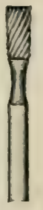

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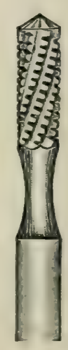

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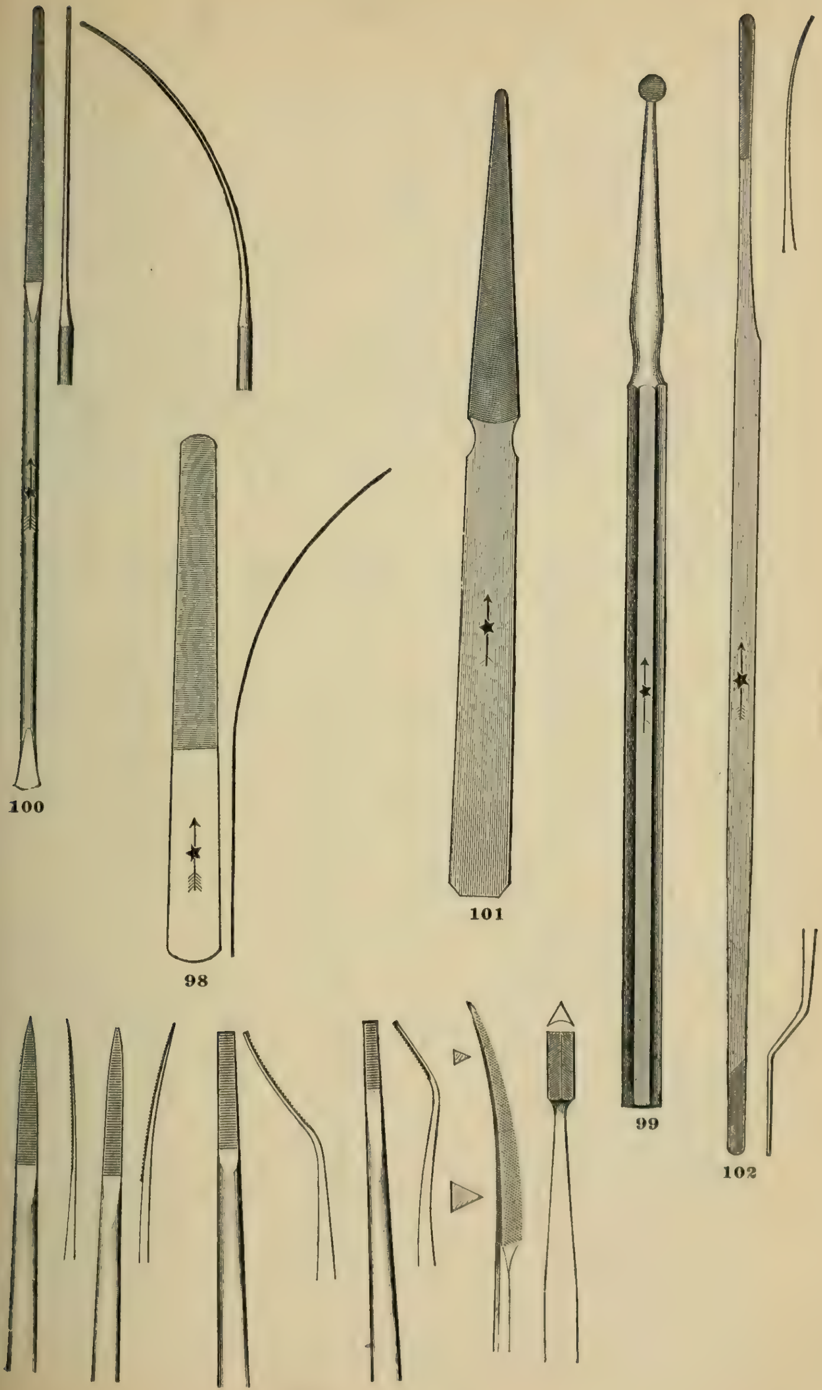

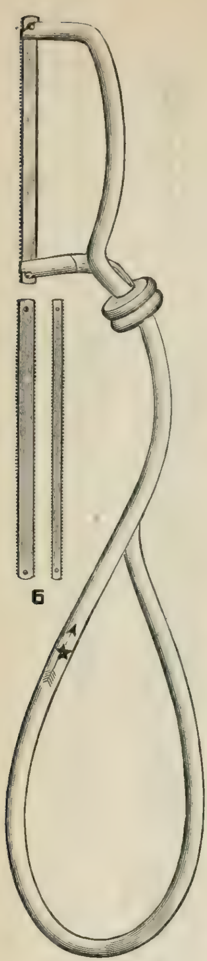

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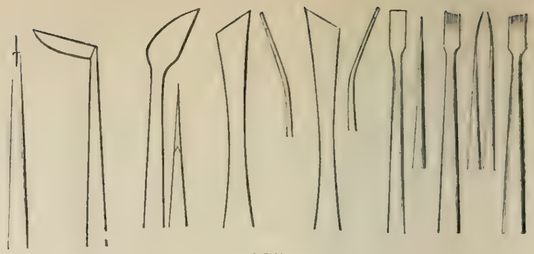

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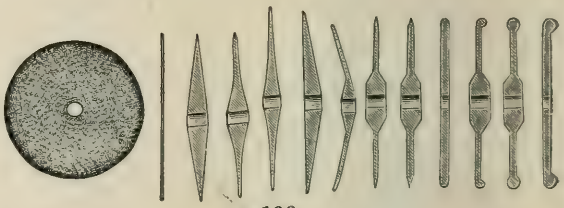

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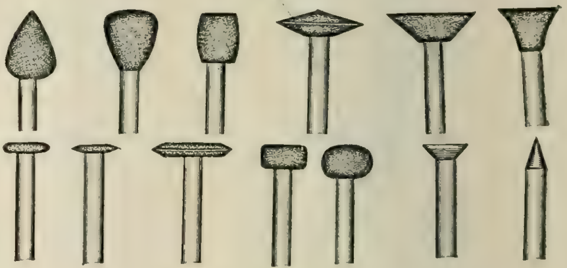

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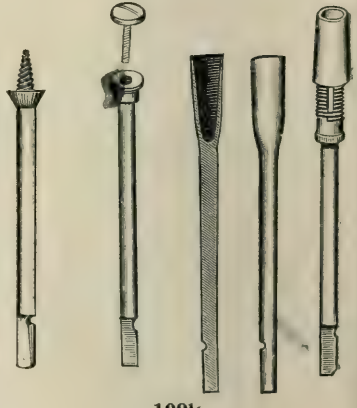

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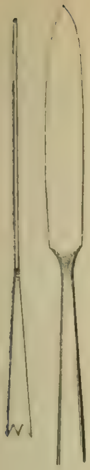
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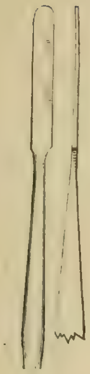
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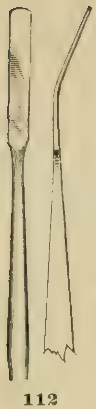
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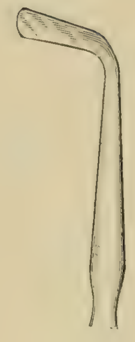
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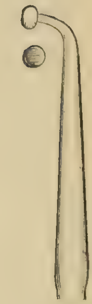
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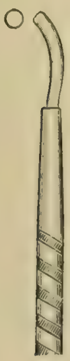
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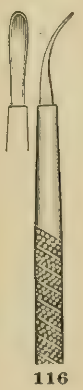
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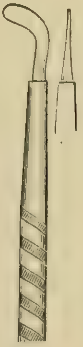
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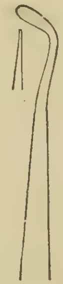
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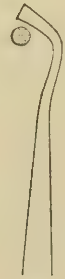
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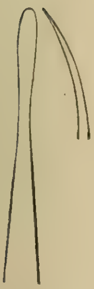
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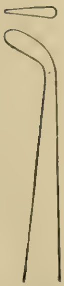
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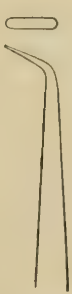
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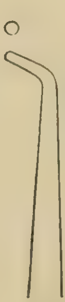
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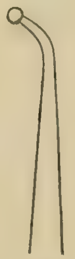
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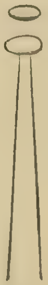
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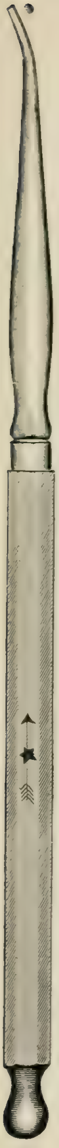
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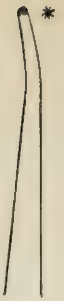
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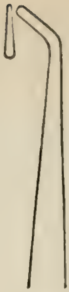
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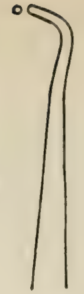
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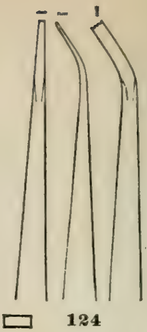
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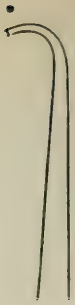
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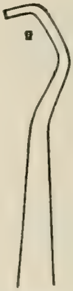
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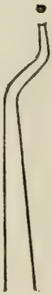
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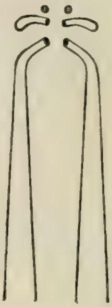
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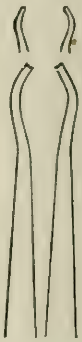
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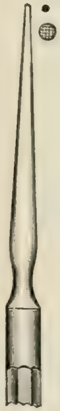
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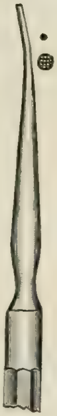
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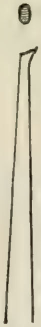
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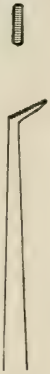
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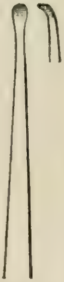
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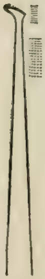
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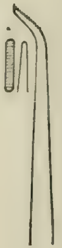
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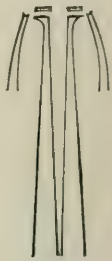
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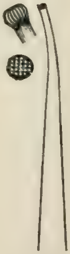
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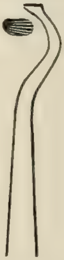
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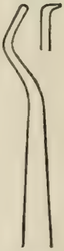
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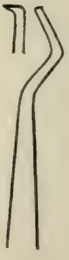
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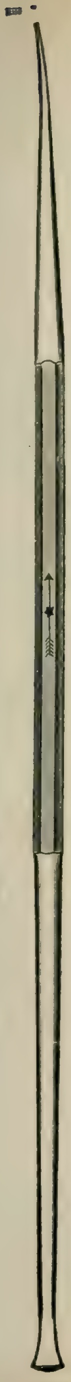
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FIG. 139.

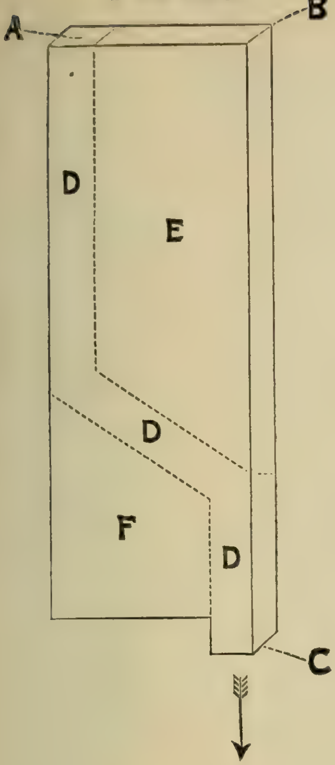


FIG. 140.

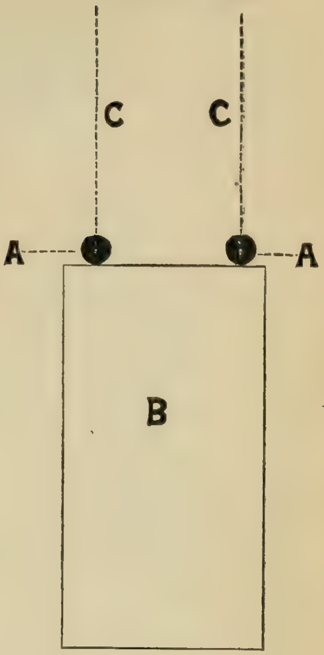


FIG. 141.

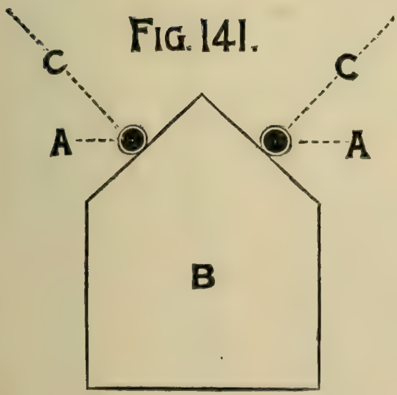
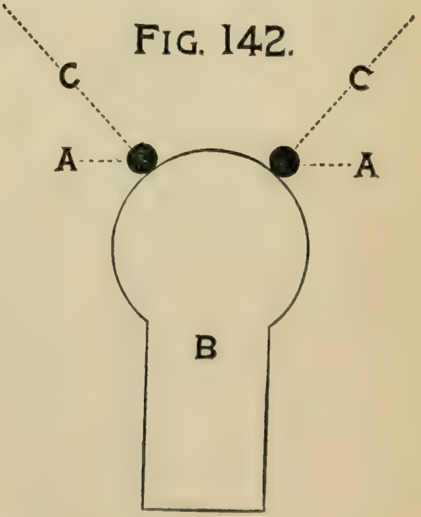
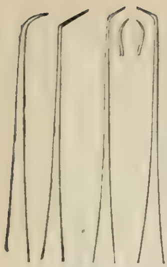


FIG. 142.

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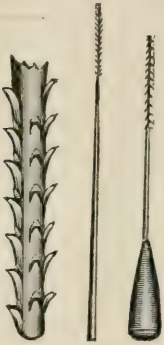
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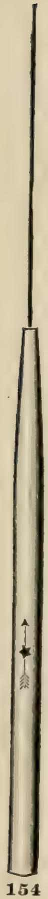
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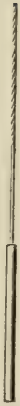
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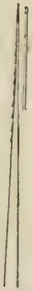
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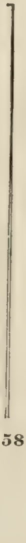
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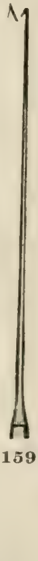
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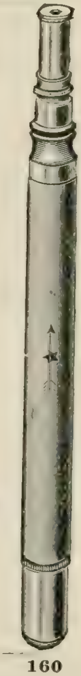
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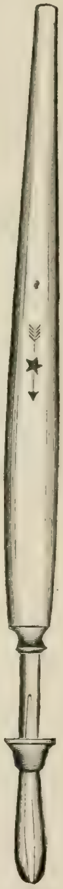
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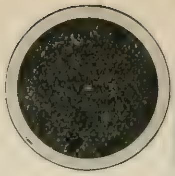

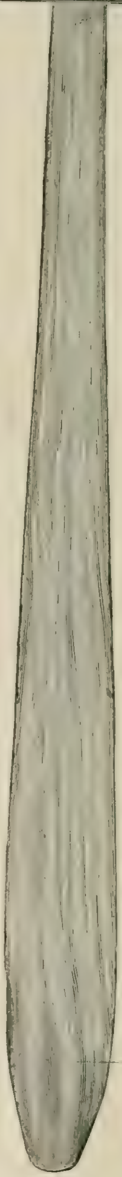
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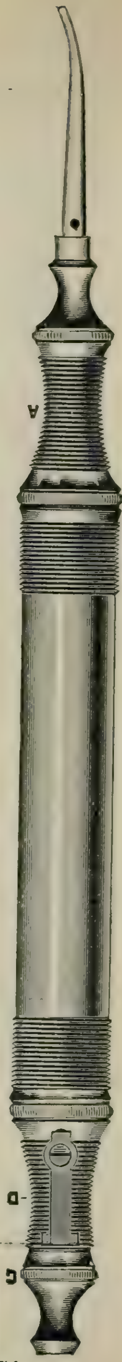

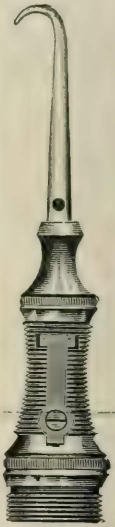
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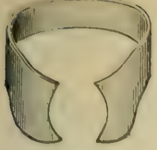

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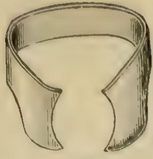

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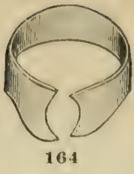

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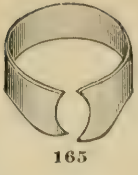

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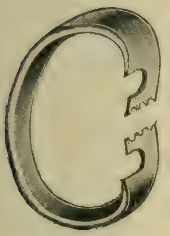

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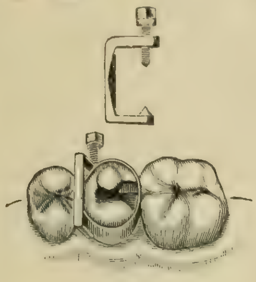

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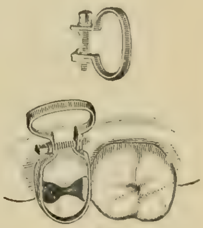

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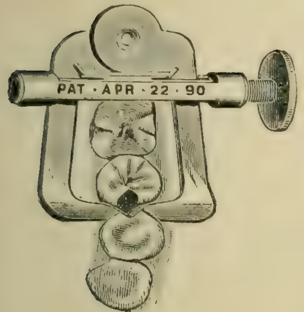

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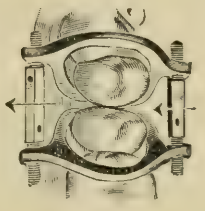

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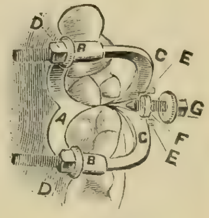

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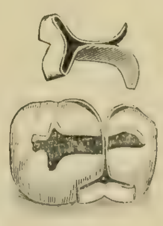

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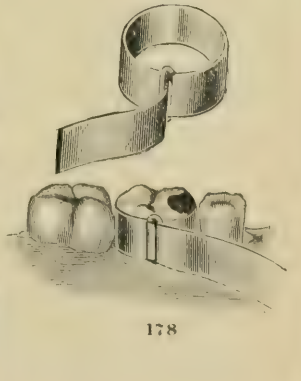

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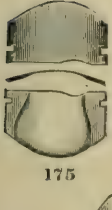

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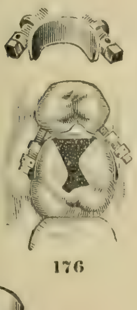

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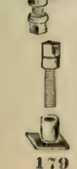

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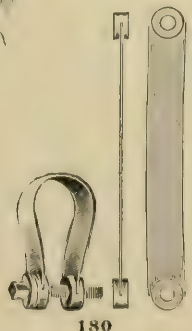

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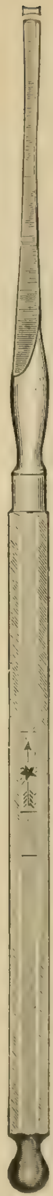

169

How Best to Read and Study and Write Dental Literature.*

By C. N. Johnson, L. D. S., D. D. S., Chicago, Ill.

Mr. President and Gentlemen:—The phrase "dental literature" in the title given the essayist by your committee probably relates more particularly to the periodical literature of the profession than to books, and it is to this phase of the subject that, with your permission, the writer will chiefly devote himself. Most of the dental literature of the present day is made up of matter appearing either originally or finally in dental journals, for there is very little that is published in books but what has, in one form or another, found utterance in periodicals. It may, therefore, be realized what an important place in the general literature of the profession our journalistic literature is destined to fill, and he who keeps well abreast with his dental journals and watches closely the book reviews contained therein, so that he may avail himself of any special book on a subject of interest to him, need not fear of missing much that is of permanent value.

The division of the subject into three parts, to read, to study and to write, very justly implies that there is a distinction between reading and studying, and yet for the purposes of the present paper it may be well to consider the two in the same connection. At the outset it must be assumed—with the possible risk of taking too much for granted—that all are agreed as to the necessity of a familiarity with our periodical literature in order for a dentist to keep himself fully alive to the best interests of his patrons. The question for our present consideration is, how best may this familiarity be maintained?

To gain a comprehensive idea of what is going on in the profession a dentist should subscribe for five or six journals at least. No one journal can supply the demands of a progressive man, for each journal has its distinguishing characteristics, and therefore represents a different line of thought from the others.

In reading and studying dental literature to the best advantage it is necessary to plan some system whereby the work may be pursued in a regular and consecutive manner. The average subscriber to our journals, probably falls far short of gaining the greatest possible benefit from his literature on account of aimless methods of reading. To subscribe for a journal and then leave it lying around the office to be picked up in a haphazard sort of way whenever chance suggests a spare moment is to waste, for the most part, the money paid for subscriptions. Such desultory reading as this, leaves no lasting impression on the mind, and results at best in a confused idea of what is going on in dentistry. No one method of reading can be laid down as a guide for all subscribers to follow. Individual circumstances and conditions operate to render necessary a separate plan for almost every reader. Each one should study out that plan which to him seems the most convenient and profitable, and this method when once arranged should be rigidly adhered to until a better one presents itself. This may at first require some discipline, and usually dentists are not good disciplinarians (especially when it comes to disciplining themselves) but in the end it will be found that even discipline itself becomes a habit, and if the method pursued be the one best suited to the requirements of the individual it will soon seem easy to follow.

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*Read before the joint meeting of the Iowa and Nebraska State Dental Societies, May, 1894.

While, as has been said, no one method can be advanced as suitable for all, yet a few general suggestions may prove of interest. Supposing the subscriber be a young man just starting in practice, the advice is to read carefully every article appearing in the journals. This may at first thought appear like a waste of time, but there are many arguments to favor its observance. The beginner often has considerable time not taken by appointments, and that time may be more profitably spent in making himself familiar with the literature of the profession than in any other manner. No young dentist of a receptive nature can read an article treating on any line of practice without carrying the influence of that article to the operating chair or laboratory. In the early days of practice it may be well to keep the journals at the office for at least the first month of their appearance, where they may be perused at will during any spare time. It is far better to keep the mind fully engaged with topics relating to practice than to read light literature during office hours, or to sit brooding over lack of practice. After the journal has served its purpose at the office it should be taken to the home and placed in regular order in the library. During the process of reading the journal, careful note should be taken of those articles which will justify a second reading and subsequent study. To keep a list of these it is well to have an indexed title book in which to record the title of the article with the name and date of the journal. This title book or something to fill its place should be made a prominent feature in reading and studying dental literature. By its use the reader may keep year after year a list of those articles to which he may wish to refer at any time, and if he subsequently drifts into a specialty and becomes interested in any one line of work, he will find in his book on the one page a list of those articles bearing on his specialty with the date of publication and name of the journal containing them. Without a title book of this kind it is necessary to look over the entire index of every journal in the library in order to examine the literature of any one subject. This indexed title book should be in the hands of every reader of dental literature, young or old. Every dentist can select such a one as seems best adapted to his needs. Probably a small one that can be slipped into the pocket and thus readily carried between the office and the residence will be the most convenient to the majority, but an extensive reader could so enlarge the scope of the work as to result in a complete index of the periodical literature of the profession. Such a record kept for several years would eventually prove a most valuable work of reference and save the reader a great amount of time.

In addition to the reading done during his office hours, the young practitioner should religiously set aside certain evenings in the week for professional reading and study. At these times he can pursue a certain line of thought without fear of being disturbed, as he often must be in his office, and the concentration of mind possible in the quiet hours of the evening impresses the subject matter upon him to a degree not approached under other circumstances. While reading, whether at the office or the house, careful note should be made of every word whose meaning is not well understood, and the dictionary should be appealed to in every instance, so that the reader becomes familiar with the technical terms used by writers upon dental subjects. As practice increases, and the time is more fully occupied in the office, it becomes necessary to do less and less reading during the day, and eventually the time comes when all reading at the office must be abandoned, and the journals carried home for perusal. This need not necessarily result in extending the number of evenings to be employed in this work, for by this time the practitioner is presumably in a position to discriminate somewhat in his reading. It has just been stated that the recent graduate should read carefully every article appearing in his journals to the end that he may keep himself occupied and gain a familiarity with the various writers and their theories, but as this familiarity is gained it will impress the discerning and experienced reader that there is much appearing in our periodicals that does not call for verbatim examination on the part of the advanced practitioner. He will soon learn to select those articles which merit his careful attention, and to dismiss the others with a hasty glance. It will become more necessary each year to exercise good judgment in this respect, so that time—which grows more valuable as age advances—is not wasted on indifferent literature. By careful discrimination and the constant use of the title book, a practitioner may keep himself in touch with the current literature of his profession and still have time for his social and domestic duties, and also for writing dental literature himself.

The time has now arrived when the practitioner should begin to pay back in part the debt he owes the profession by adding something from year to year to its literature. No man should be a drone in the dental hive any more than in the great hive of humanity, and just so soon as his experience justifies it he should begin to cultivate the habit of writing out the results of his observations gained in practice and by reading, and incorporate them into papers for dental societies or original communications to dental journals.

This brings us to the consideration of the third part of our title—how best to write dental literature. This must be acknowledged a difficult subject to treat in a manner to make it interesting, or of practical value to the average member of a dental society. The suggestions attempted in the present paper are intended to apply for the most part to beginners, and some of the hints given may appear so simple and so patent as not to be worthy of a place in an essay to be read before such a meeting as this. Extenuation is pleaded on the ground that experience has shown how deficient the majority of writers on dental topics prove themselves in many of these minor details.

The first requirement for a paper on any topic no matter what the age of the author, is for him to have something to say. There should be a distinct idea in his mind that he has a matter of some import to tell the profession. It need not necessarily be—in fact in the very nature of things it seldom can be—anything strictly original. But it must be something with which he is personally impressed—something which he feels needs more emphasis than has yet been given it. It is possible for some valuable line of practice to be advocated in our periodical literature and remain in print for months, and even years, without the profession generally adopting it or giving it the attention it merits. This is often due to the fact that it has been indifferently presented to the profession by its originator. The man who takes up a subject of this kind and by the very earnestness of his conviction forces the profession to give it due consideration is often of more practical benefit than the man whose genius originated the idea. If all practitioners cannot be original investigators they can at least be thinkers, and no man should allow himself to be a thinker for any length of time without giving the profession the benefit of his thoughts. In a calling like dentistry he should not be a thinker "for revenue only." The specious plea made by some of our inventive geniuses that they are able to think out a problem for themselves but are unable to describe the process on paper so that the profession may get the benefit of it should not long obtain in this age. Too much literature of all kinds is appearing every day to leave a man long in ignorance of proper modes of expression, and even if a first, or second, or third attempt fails in a clear statement of his idea this should not discourage him from repeated effort till he gains his point. It would probably surprise the literary novice to be told how many times the MS. of some of our ablest authors of general literature is rewritten. The fact that an article reads smoothly is no indication that it was written easily—the fact is usually to the contrary. Persistent effort of this kind will prove beneficial to the writer in more ways than one. No man can write out an idea without having that idea made clearer in his mind—he cannot describe a method or an appliance without forcing the details more firmly into his brain on account of having given concise and accurate expression to them. In no department of our work is the saying "practice makes perfect" more true than in this.

After being assured that he has something of interest to tell the profession the next point for the practitioner to consider is the proper method of saying it. Here we approach a subject upon which it is difficult to give definite instruction. No man can tell another how to write within the limits of one short paper, and in truth it is not altogether clear just how far one individual can impart this knowledge to another if given the amplest opportunity.

The most that can be done is to offer suggestions and point out defects.

In writing a paper the first thing to do after having the subject well in hand is to arrange the matter in a systematic manner so that the line of thought will be carried in the mind of the reader in a logical sequence from title to colophon. In order to do this it will sometimes be necessary to make notes consisting of a series of headings before any writing is done on the paper proper. For this purpose it is well to have always at hand a slip of paper for some time before the essay is started while the general idea of the subject matter is taking form in the mind, so that any heading may be jotted down as it occurs. Often an idea will suggest itself while working at the chair, or in the laboratory, or riding in the street car, or lying in bed vainly dallying with the sometimes fickle god, Morpheus. If the idea is not caught and trapped on the instant it is quite likely to slip away never to return, or perhaps to return too late. Armed with adequate notes the writer may properly arrange the headings in orderly sequence, and when this is done it is safe to say that half the labor of writing that paper is accomplished.

If the paper is started without a properly arranged list of headings, it is often the case that ideas occur to the author as the paper progresses, and in order to get them into their proper places, he must insert them in the subject matter at some point previous to where he is writing—in doing which he usually destroys that rhythmic harmony that should ring throughout the paper from beginning to end.

The preparation of MS. for the printer is a subject which might appear of such minor importance that its consideration would seem uncalled for in a paper like this, and yet it is a matter which in the aggregate causes no end of worry, and—must it be admitted? — considerable justifiable profanity on the part of editors of dental journals. The first copy of a paper is usually disfigured by frequent interlinings, erasures and corrections of various kinds; and no man of any conscience will read a paper before a society in that condition, much less turn it in to the editor for publication. It is well when the first draft is completed to put away the paper in a pigeonhole and leave it for as long a time as convenient, until the author grows unfamiliar with its phraseology. It should then be read aloud to see how it sounds, and it will usually be found that defects present themselves which in the first flush of composition had been overlooked. When the paper has been carefully corrected, it should be copied in a clear, plain hand or, what is preferable, with a typewriter. Typewritten copy is manifestly so much better than the writing of the average professional man that some societies specify that papers presented for publication must be typewritten. No paper should be read before a society or offered for publication without careful attention to a certain point which is quite frequently entirely ignored by authors. This relates to the title of the paper, the name of the author, his place of residence, etc. Too often are papers handed to the editor without the slightest indication, so far as the MS. is concerned, as to what they are about, or by whom they were written, or where they were read; and the sublime complacency of the authors is epitomized in the remark recently made by one of them, "What are editors for, anyhow?" It may here be modestly intimated that editors are not for the purpose of divining hidden mysteries such as are sometimes presented for their solution, and the sooner writers recognize this the better it will be for the author's peace of mind and the editor's prospect of heaven. When the typewritten copy is made it should contain first the title of the paper, then the name of the society before which it is to be read, with date of meeting, the name of the author, with his degrees, and the town and State where he resides.

The question of punctuation is sometimes a matter of importance, but no rules can be given that will benefit the average writer except probably the one rule of common sense. A word of admonition, however, may be deemed admissible for those writers who fall into the abominable habit of punctuating everything with a dash. The dash is a valuable adjunct in the process of punctuation when properly applied, but it can scarcely be advocated for exclusive use in lieu of commas, semicolons, colons and periods. Some of the MSS. that come to an editor call to mind the remark of a lady writer who on being asked her authority for using so many dashes said, "Oh, when I'm in any doubt as to punctuation I throw in a dash." Some of our writers according to this would appear to be in doubt most of the time, and if their MS. was given to the printer as it leaves their hands the proof would make it appear as if more than half of the author's mind was in a blank. A safer precept than the lady's would be—when in doubt do not use anything.

Moderation is also suggested in the use of italics. These innocent little letters have their legitimate place in our literature, but too often they are dragged out to bolster up an argument which contains little strength outside of the emphasis given it by the conspicuous type. It is sometimes as if the author were aiming occasional blows at the reader to compel his attention to the various points he was attempting to make, in the evident conviction that without this method of typical gesticulation the points would be overlooked.

Offensive mannerisms of speech such as too frequently mar the pages of our journals should be avoided. These are mostly matters of habit and few men realize how badly they have this habit till they conduct a critical examination of their own work. An instance of this kind occurs in a recent issue of one of our most pretentious monthlies where on a single page no less than five sentences are started with the word "Now." This word seemed to be the evil genius of that writer for in a short article of a little more than three pages he made it do duty in this respect ten different times. This in face of the fact that in every instance the sentence would have been strengthened by its omission. It was not used in the sense of stating time but simply as a disagreeable excrescence which jarred on the reader at every turn. In giving full sway to this one mannerism the author made an article sound ridiculous which in other respects was a worthy one. A good way to cure one's self of this habit is to read aloud the MS., as has before been advised, previous to having it type-written, but in case the habit has become so far a second nature that the author is unable to detect his own mannerism he would do well to hand it to some friend for revision. When his defect is once pointed out he should avoid it in his future writing.

A final word of advice directed more particularly to our young writers must conclude what is already too long a paper. The usual tendency with amateur authors, especially if they chance to be favored with a prolific vocabulary, is to indulge in too much fine writing—in other words to give their work a hifalutin style which shoots wide of the mark in an essay on any professional topic. High flown, stilted phraseology is being more and more tabooed in the general literature of the world. It is frowned upon by the purely literary individual everywhere, is being less and less indulged in by the newspaper man of the day, and even the novelist himself—that literary Bohemian whose main stock in trade it has oft times proved itself to be—is now forced to use it, if use it at all, in the face of ridicule and caricature. How far then should it be removed from a place in the literature of a profession like dentistry. Study simplicity of style, plainness of speech, aptness of phrase and brevity of expression. Think out the thing that you want to tell—think it out clearly in your own mind so that the idea is indelibly engraven there before you attempt to put it on paper. When you begin to write keep the idea firmly fixed as your text and write strictly to that text. Go at once to the heart of your subject, say what you have to say about it in the most concise and direct manner, and when you are through—stop.

PROCEEDINGS OF SOCIETIES.

JOINT MEETING OF THE IOWA AND NEBRASKA STATE DENTAL SOCIETIES.

The above societies met in joint session at Omaha, Nebraska, and Council Bluffs, Iowa, May 1-4, 1894. Two such societies could not come together without having a good meeting, and the one just held justified in many respects all reasonable expectations. Creditable clinics were given, good papers were read, and the members of the two societies cemented a mutual friendship. It is doubtful, however, if joint meetings of this kind are conducive to close scientific application on the part of the members. The sentiment is growing that better work may be done where each State holds its meetings irrespective of any other. It is usually noted that at joint sessions neither society has as full an attendance as when the meetings are held separately, and it is seldom that as good scientific work is done. These joint meetings are beneficial mainly in the opportunity they offer for members of the profession in the different States to become acquainted. For this purpose, if for no other, they should be held occasionally.

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CLINICS AT SOCIETIES.

Dental societies which succeed best, which bring to the greatest number the greatest good, are those societies in which the clinical features are preëminent. This fact, however, seems to have been overlooked by some of our most able, and usually far-sighted men, who have written and declaimed against the clinic as a feature of our societies, and especially of State societies. Their thought and wish has been that the more extensive body should be a scientific one in which the work should be confined to purely abstract thought, or the discussion of subjects which although pertaining to dentistry, and which tend toward a broader and wider knowledge of the tissues with which the dentist deals, have little practical connection with his labor at the chair or in the laboratory. These men are all deeply interested in the advancement of dentistry—there can be no doubt of that. The original investigations they are pursuing, and the thoughtful study they are giving the tissues of the mouth, is placing dentistry upon a higher plane, making it in reality a liberal profession; but their advocacy of the abolishment of the clinic as a part of society work lays them open to the charge of selfishness, and the desire to magnify their own efforts in special lines rather than that the principles which even may have been enunciated by themselves should receive a practical application in the hands of others.

The chief and almost the only reason for the existence of the clinic is the application of principles to practice. To make it successful in the highest degree new principles must be constantly illustrated or old ones receive a new application. If this is not done the clinic is a failure. When the clinic becomes a failure the association which has for its object the advancement of dentistry also becomes a failure. These statements are dogmatic, but dogmatic as they may seem they have been fully demonstrated by the practical abandonment of one of the oldest, and for a long time one of the most useful of our associations. Its clinics became gradually less interesting, the papers, however, remained at the usual level. As the clinics interested less, the attendance became less, and those clinicians who did appear year after year, failing to receive the appreciation their efforts deserved, lost their enthusiasm, and with it the stimulus necessary in the adaptation of new principles to practice. With the interest lacking at the source, what could be expected from those who journeyed long distances hoping to derive some benefit, practical as well as theoretical?

It must not be forgotten that dental societies are educational bodies for their members. Their members are not all capable of the same thought as those whose work has been developed along special lines. While they are interested to a degree in the abstract thought of the author of a paper, they expect and long for something more concrete. This is especially true of members of our State societies who are comparatively isolated from their professional friends. They can and do receive all the abstract matter they care for through the medium of the journals, and are able to take it in at their leisure ; but they have no opportunity of gaining the more concrete but equally important knowledge, so far as practice is concerned, except at their State meetings. To make our State associations useful in the highest degree, the abstract quality of the papers must be tempered by illustration—must be presented in such form that the eye as well as the ear shall be pleased. This is best accomplished by means of clinics.

It is argued that medical societies and other scientific bodies hold no clinics, present no illustrations, but when this statement is made, there seems to be no desire on the part of those arrayed against clinics, to recognize the fact that when illustrations have not been given in these bodies, it has been only because the circumstances of their meeting places made it impossible to present them. Were it possible, clinics and illustrations of every kind would be provided in abundance. The same causes do not prevent dental societies from giving their clinics.

Again, to understand methods of operating in dentistry,it is almost absolutely essential that the one to whom the knowledge is imparted shall see the detail of the performance. The knowledge cannot be determined from a paper, be its descriptions ever so accurate or minute. The stages of treatment of a medical or surgical case may be easily and accurately described, and the details left to the mind of the recipient of the instruction, but the details of treatment of a case in dentistry depends to such a great degree upon the individuality of the instructor—that only the sense of sight can convey the proper impression to the mind of another.

Leaving out all points of argument, it is self-evident to a frequent attendant of State associations, that the chief interest of the meeting for isolated members, centers in the clinics. They receive the papers presented at these meetings in their journals and were it not for the practical side—the clinics, exhibits of new appliances, and the points gained by personal contact with each other, they would show quite pointedly by their actions toward the succeeding meeting that the previous one had been a failure so far as they were concerned.

The recent St. Louis meeting demonstrated almost conclusively the attracting power of clinics, for dentists gathered from far and near drawn solely by the clinical features of the meeting.

When could such a gathering be secured by the presentation of purely technical matter unless it would be decidedly practical in nature? G. J. D.

THE RELATIVE VALUE OF GOLD AND AMALGAM IN FILLING TEETH.

Arguments pro and con in regard to this question have been going on more or less vigorously ever since amalgam was first introduced into the profession. Advocates of each material have blindly proclaimed the advantages of their favorite to the utter annihilation of the other. Waves of opinion have swept over the profession, sometimes carrying gold on the topmost crest, sometimes bearing amalgam so high that gold seemed in danger of being submerged. Just now there seems to be a wave in favor of amalgam. Arguments are being advanced to prove that gold is not indicated in a large majority of cases presented for filling, and the prophecy is freely made that the next decade will see amalgam more popular than it ever has been before. These arguments are based on the assumption that better grades of amalgam will be introduced, and better methods of manipulation be followed. We are willing to hope that improvements may be made in the manufacture of amalgam, and we gladly welcome any tendency toward a higher proficiency in the manipulation of this material, but we cannot in the least agree with amalgam enthusiasts when they predict the downfall to the slightest extent of a filling material that has for so long stood the test that has gold.

The most unfortunate feature of this amalgam question lies not in the fact that men of high degree are sometimes found among its advocates—in their hands it will be carefully manipulated—but the mischief is wrought when men of low degree seize upon a chance endorsement by some one standing high in the counsels of the profession, and make this endorsement the scapegoat for all sorts of indiscriminate stuffing and plastering which invariably accompanies the use of amalgam in careless hands. There are men of a certain class who snap up every argument made in favor of amalgam and roll it as a sweet morsel under the tongue. They are for the most part men who are not proficient in the use of gold, and they bolster up their position with quotations from their superiors to justify them in their extensive use of amalgam. Say everything that may be said in favor of amalgam—and it is admitted that much may truly be said in its favor—the fact still remains that to use amalgam extensively is to beget with a large majority of operators, a slovenly method of working. It is true that a man of high artistic and mechanical taste may use any material without deteriorating in his methods, but it so befalls that men of this type usually select gold as their favorite.

The truth about the relative value of gold and amalgam for filling teeth probably lies between the extremes taken by the advocates of either material. No man can successfully maintain the assertion made by some that amalgam has no place in dentistry. It has a place—a very important place—one that no other filling material yet invented can supply. It has saved hundreds of thousands of teeth that never would have been saved without it, and this is a tribute to its virtues that no one can ignore. Truly it is a good servant, but an exceedingly bad master. It should not be allowed to dominate any man's practice, because it almost invariably works havoc with high ideals. It should be kept rigidly within its proper limits, and when used at all it should be used most carefully.

As for gold it must still remain the peer of any filling material yet invented. Nothing that has ever been introduced into the profession can approach it in usefulness. It has its limitations and those limitations are somewhat sharply defined, but all in all it is more reliable, more cleanly and more beautiful than any other material we have. Besides this, its use tends to develop a high order of talent, and no man can study well the characteristics and manipulation of gold without being a better dentist for it. No amount of argument can supplant gold with amalgam.

RECORD YOUR LICENSES.

The State Board of Dental Examiners of Illinois, are making it somewhat uncomfortable for those members of the profession who have taken out their licenses, but who have failed to have them properly recorded. In order to make a license binding it is necessary to have it recorded with the County Clerk of the County in which the licensee wishes to practice. This must be done within six months of the time the license is issued by the Secretary of the Board. If the license is allowed to lapse, the Board may charge a fee of $25.00 to issue a new license, and it thus behooves a practitioner to attend promptly to this detail.

PRESS BACK THE FESTOONS.

Whenever gutta-percha is temporarily placed between the teeth for any purpose in the management of proximate cavities, there is one important item in its manipulation that should never be overlooked. As commonly used it is merely pressed down into the cavity with little attention to the form that is given it. The temporary purposes for which gutta-percha is ordinarily employed are the following: To seal medicaments in the cavity during treatment, to maintain space between teeth till the soreness passes away after wedging, and to press back the gum which may have grown into the gingival portion of the cavity. All these are laudable objects but much harm may be done to the gum septum by the careless use of gutta-percha in this manner. The point to which we wish especially to call attention is this: When gutta-percha is placed between the teeth for these purposes it should invariably be made to extend broadly over the gum septum buccally and lingually, with the object of pressing back the festoon to a level at least, with the portion lying immediately between the teeth.

There are two important things to be gained by this procedure. First the festoon is held out of the way so as not to interfere with the operation of filling. If the festoon be allowed to extend to its normal position while the proximate gum septum is pressed back it will result in the festoon standing up more prominently than the septum and this prevents the easy adjustment of the rubber dam. It also interferes with the use of strips, files, discs or other appliances in finishing the filling. The festoon is often seriously lacerated in the attempt to trim down a filling, and this can all be avoided by pressing the festoon out of the way.

The second point to be gained is even more important. The normal form of the gum septum is that of an arch with its highest point midway between the teeth. This prevents the lodgment of food in the interproximate space on account of the sloping away in both directions of the gum tissue. If this arch is inverted by pressing gutta-percha into the interproximate space to the gingival outline of the cavity it results in a pocket between the teeth into which food will wedge immediately after the filling is inserted. The festoons standing so prominent tend to hold the food between the teeth, and this prevents to a serious extent the return of the gum septum to its normal position. If the festoons are pressed well back on the necks of the teeth, food will not readily wedge into the interproximate space, and the gum will creep up to its normal form and position in an astonishingly short time.

We commend this matter to the consideration of those who have not tried it. They will find that the operation will be much facilitated, and the gum septum left much healthier.

DOMESTIC CORRESPONDENCE.

New York Letter.

New York, April, 1894.

To the Editor of the Dental Review:

April is the tearful month. No one could be in New York these windy days with clouds of dust filling the air without shedding tears. Although the white and windy city of Chicago keeps a smutty face we cannot boast much by calling the kettle black. We have a hungry horde that live on the streets of New York—by constantly digging them up; and all the consolation one can get on inquiry of the why of it is "cheaper gas." But who has ever found any reduction of gas bills because of this? Well, if Brittania rules the wave, Tammany rules New York.

Scientific tears can fall to-day in memory of the most noted scientist living—Brown-Sequard. Whatever can be said of his misrepresented discovery, his name will never take a second place in the annals of history in the minds of men who are able to discriminate by the aid of an intelligent vision. He never claimed what penny-a-liners attached to his discovery. What he did claim has been proved by practical demonstrations.

In the *Medical Record* of March 31 on "Skilled Labor and High Fees," there occurs a sentence which we quote: "There should be no limit for maximum fees beyond the possibility of their being paid by persons abundantly able to do so." How unmerciful have some dentists been toward their fellows in this regard. No one knew better what this unkindness meant than our dear Atkinson, and never was there a more ungrateful lack of recognition than in the trying ordeal he was forced to pass through in his experience with the Crœsus, "Gutman Blanco," ex-President of Venezuela. This was because of the weakling cry of his fellow practitioners—"Robbery," "He is a thief," and much more by New York dentists. We noticed a sad misrepresentation in an article in the July number of the *Cosmos* by a Michigan dentist referring to this matter, talking as if he had the truth of it when he had only peddled-out hearsay. Think of a man of reputed wealth of forty or more millions coolly sailing out of New York harbor with over thirty days work of skilled service by him who was justly reputed as our highest and best, and not a dollar left for remuneration. Just before his demise Dr. Atkinson was forced to accept a paltry $12,000 as a compromise by the courts. Why? Because of the low estimate of one's fellow craftsmen. No man ever placed himself on a higher pinnacle among dentists besides Dr. Atkinson, than Dr. Norman W. Kingsley did in his estimate of fees viewed from a professional standpoint in the case which we reported in one of our letters. Every practitioner ought to pin this statement of Dr. Kingsley's in his hat. Oh if we could only photograph some of the belittling bills we have seen coming from men who sit in high places! They were worse than a cobbler's. Are we a liberal profession? *Good!* Dr. Farrar is reported to have received a $5,000 fee. (See the New York State Association proceedings.)

We have said this is a tearful month in which the clouds are easily rent and the result is often a sudden overflow. This proves true in our literature in the April number of the *International*—a decided pyorrhœa, yes an overflow, but not much of a shower—a great deal of space covered. This may be satisfactory to the writers, but it does little to teach the thoughtful inquirer. Yet it is gratifying to Prof. Pierce that his writings are receiving so much attention, but we do not discover that any of the articles have met the discussion on the ground that the subject demands; that is if we expect to arrive at the etiology. This subject can only be met by an intelligent dealing with physiology, histology and pathology; starting with the question of health and what we are to expect of it if we consider it from the standpoint of rightly guarding it; and also what we must expect if we disregard it. That we can and will in a measure be able to ameliorate the painful results of this disease is already true, and we will doubtless become more and more efficient in the practice both from a surgical and constitutional view, but we can only arrest, and *never* cure. We have already expressed our views of Prof. Pierce's writings. Not a little has been said by every one of the writers that could well be culled out. Prof. Guilford is the only writer who has started right. He manfully recognizes one important point and gives credit to whom it is due, while the mass stolidly ignore it. This is not just to history nor the coming practitioner. The ablest information that we have had on this subject at the start was from Dr. Riggs, of Hartford. This was immensely practical, and the most scientific dealing has come from the late Dr. W. H. Atkinson, of New York. His article read before the First District Society presents the subject as only science can. He bases his views and teachings distinctly upon the basal principles; on these only can we build a structure that will support us in our conclusions. How many of our contributors to dental literature have the ability to do this? Herein lies the value of microscopic studies. We cannot get down to bed rock without "high school" studies.

Topeka Thompson's article in the March number of the *Western Dental Journal* will richly repay the reader and help to emulate higher ambitions. The *British Journal of Dental Science* pays compliment to the "Scribe of the Cynicus Club" in a liberal editorial.

Prof. Harlan says it is not good practice to use coagulants because it shuts in septic conditions which are ultimately likely to reflect adversely through the pericementum. What Dr. Kirk showed by chemical experiment on pure albumen does not seem to apply practically to what Prof. Harlan had in mind; for, only in the case of surgical extirpation of the pulp would there be the presence of pure albumen. In pulps destroyed by inflammation and arsenious acid there would be an absence of pure albumen, and such results as claimed by Dr. Kirk could not be obtained. In the case of removal by surgery only could there be such results. It has occurred to us that how far osmotic action would be involved in the case of chloride of zinc application to pathological conditions is a question, for there would be present atmospheric associations; while in Dr. Kirk's experiments the action was in a closed vessel. The carbolate of albumen formed by application of carbolic acid is a carbonized material formed by the escharotic effects of the acid. Eschar means to burn. In this case it is noticed that the atmospheric associations are involved and chemical conditions are changed, but not in the coagulation of the albumen as shown by Dr. Kirk's experiments, for it is only a mechanical result produced by intense activity of molecular movement producing a compact of hardness by a form of cohesion similar to the forming of ice by congelation, which renders it capable of a return to liquefaction, but not so in carbonized material. Just in this connection there comes to our notice the intensely interesting tournament between Drs. Harlan and Hinkins. Here is something that is commendable and helpful to men having eyes and ears. There is something to be learned. It seems that the evidence is not all in yet, and the society has done a very wise thing in the appointment of a committee to effect a decision. We consider that nothing has occurred that should stimulate thinking men like this chemical bout. Both men are bright. We say this discussion suits us, and how much ahead of the common practice in our bodies in the dealing with questions only by mutual admiration—instead of intelligence. We do not think we have another society that can produce such an engagement of real chemical talent. It seems to us that the presence of atmospheric air is a matter for our worthy consideration again in this discussion; on the other hand the action of chemicals as claimed by Dr. Hinkins producing an oxalate of calcium, is another. We think Dr. Harlan's point is well taken; certainly a change must occur by osmotic action through the pulp covering, and thus change the physiological status to a pathological one in a degree; and as we have before said in this letter, we do not have the same conditions in a pulp after the action of arsenic. We glory in such an exhibition of emulative talent. We could now wish that Prof. Harlan could have been present at the reading of Dr. Kirk's paper in Brooklyn. How the Damascus blades might have glistened in the intellectual brandishments. Prod the gladiators; this will bring knowledge, and that becomes master in practice.

We bespeak a future of promise for the First District Society the coming year. They have headed the administration with young men and energetic talent. Dr. Jackson, so well known now, is President. He is one of Ann Arbor's bright graduates, and is proving a brilliant success in New York. He is every way a worthy young rival in following the steps of Drs. Kingsley and Farrar in dealing with orthodontia. He came to New York about 1877, thinking of pushing on to European fields. We recall our conversation with him upon his asking our counsel regarding his choosing New York or Europe. He is backed up by a good education and is medically and dentally qualified. He is a wise little gentleman every time and his metal has been tested. He has no politics in his make-up; he does not need them, for his *ability* will carry him where politicians never venture. They never gain real heights—only dizzy ones from which they ingloriously fall sooner or later. The eagle is in no danger of falling.

Dr. C. E. Francis proved that tin can produce contour fillings at the last meeting of the Odontological Society. Yes, that is so, but of what value are they? Every practical operator knows that tin has no wearing quality in contact with friction. Dr. Stockton said a few practical words regarding tin. It was of value where it was indicated, but we had "fads," and they were being continually returned to. An editorial was emphasized from the Buffalo *Advertiser*. What blows of endorsement the editor plied upon tin. Why, he beat it down so fine it cannot be put to any practical use —too soft—too thin. A novel project is maturing in New York for a building in which to concentrate medical specialists and dentists. We had a talk with the gentleman who has it in hand. It is proposed to place this building in the neighborhood of the Plaza near Central Park and Fifty-ninth Street, which is becoming the most attractive part of New York. The Plaza is bounded by three hotels costing in the aggregate fully $9,000,000, namely, the Plaza, the Savoy and the New Netherlands; also the Cornelius Vanderbilt mansion, costing some millions more; the railroad magnate, Huntington's stone house, now nearly complete; the Millionaires' Club House, the most expensive in the world; Commodore Gerry's exquisite new home; John Jacob Astor's imposing palace; and in fact the concentration of many of the wealthiest citizens of New York. Last, but not least, is the entrance from Fifth Avenue to the unsurpassed Central Park, containing a glory of attraction. This plan of bringing dentists into a combination of office conveniences has often been broached on a smaller basis, but like many other schemes has not matured. We were impressed in visiting the Masonic building in Chicago, during the Congress, more than ever with the plan so successfully carried out by some 150 dentists in this grand specimen of architecture. Some will say what will do for Chicago is not the thing for New York. For a moment consider the necessity of assuming rental for suitable accommodations for a sum that merchants do, who are carrying on a business of $100,000 or more each year—a burden too heavy for many a worthy dentist. If there is a class of men that should be spared these burdens it is the faithful dental practitioner. April is often a tearful and wet month because of what May happen next month—being obliged to move.

Dr. Bogue called attention to Dr. Michel's (of Paris) achievements in connection with surgery, at the last meeting of the Odontological Society—a cause for pride to our calling. It is all laid before the public in the Sunday New York *Herald*, but not a word about dentists coming in for any glory. Neither do we get any attention in connection with the Congress at Rome; certainly not by the New York *Medical Record*. If our canoe is paddled at all, it will be by dentists, pure and simple. Don't you forget it.

QUID NUNC.

CHICAGO, ILL., April 28, 1894.

Editor Dental Review:

My Dear Colleague:—I think the profession at large will be interested in an opinion handed down by the Attorney-General of this State, Hon. Maurice T. Moloney, a few days ago, to the Illinois State Board of Dental Examiners, *i. e.*:

"Under the 8th section of the law (meaning the present dental law of this State) any person who violates its provisions is liable to prosecution before any court of competent jurisdiction, upon information or by indictment, and upon conviction he may be fined not less than $25 nor more than $50 for each and every offense. This applies to a person who practices dentistry; it makes no difference in whose employ he may be, he must have a license as provided by the law. I am of the opinion that the fact that a person in whose employ he may be has a license to practice dentistry will not help the matter at all. A person not having a certificate to practice dentistry cannot avoid the provisions of the law by working under a person who has, or entering into partnership with a person who has a license, etc."

The members of the present board have worked all winter since their appointment to complete a list of legal practitioners of this State, and will be ready in the near future to prosecute all illegal practitioners. The officers of the Dental Legal Association have promised to bring the matter to the attention of their members, and no doubt this organization will coöperate with the other dental organizations of this State, to purge the dental profession of all illegal practitioners. But all the dental organizations of this State will not succeed in accomplishing the above, if each legal practitioner does not constitute himself a committee of one to help the efforts of the State Board in this direction. The first requisite for the suppression of illegal practitioners is to send their names to the undersigned with the particulars as to address, length of practice, etc. No attention will be paid to anonymous communications, and all information considered confidential.

The actions of the present board have been endorsed by a good many State Boards now, and it seems as if it was likely that the present mode of examining candidates for dental practice introduced by this board may be adopted as the standard by all or most of the boards of the United States.

With regards,
FRITZ W. HUXMANN, D. D. S., Secretary.

REVIEWS AND ABSTRACTS.

THE ETIOLOGY OF OSSEOUS DEFORMITIES OF THE HEAD, FACE, JAWS AND TEETH. By EUGENE S. TALBOT, M.D., D. D. S. THIRD EDITION REVISED AND ENLARGED, with 461 illustrations, 422 of which are original. Pp. 487. Published by the W. T. Keener Company, Chicago, 1894.

To attempt a detailed, critical and adequate review of a work of this nature and magnitude within the limits assigned to the book reviews in a dental journal is a disappointing and hopeless task. To epitomize the whole matter it is simply necessary to state that it is Talbot up to date. This is saying a great deal, for no one man in the profession has devoted so much thought, research and investigation along the lines indicated as has Dr. Talbot. The present work is more extended in its scope than any of its predecessors, and the author's reason for this is outlined in the preface. He says: "The earlier editions of the present work were an outgrowth of researches which tended to oppose the too prevalent theory (erroneous in its deductions and vicious in its effects on practice) that irregularities of the teeth and jaws were the result of local, not constitutional conditions. The increasing volume of evidence against this theory has forced the author to extend the scope of his original inquiry into departments of oral and nasal medicine, and surgery of the eye, ear and face, so intimately related to dental medicine through the causation originally assigned for irregularities of the teeth and jaws. The alleged causative factors in the case of the nose and mouth were themselves often found to be of constitutional origin. The scope of the researches presented in this edition, therefore, while seemingly extended are practically confined to the limits of the original inquiry."

In pursuance of the scheme thus outlined, the author has advanced a vast array of phenomena to prove his theory, and has searched the literature of the subject so devotedly that one is lead to wonder at his energy and industry. Some of the phenomena presented, it is true, would appear at first glance to bear little relation to the subject, and yet in these days of specialization it should not be considered an unhealthy sign to find an author looking at a question from the broadest possible point of view. Again the average reader may sometimes find it difficult to follow his deductions, and in fact may occasionally fail to discover any deductions at all, but then it must be remembered that Dr. Talbot does not write for the average reader. No man need expect to gain a deep insight into the theories presented without careful study, and in this connection it would sometimes appear that this study might have been faciliated by a different arrangement of the subject matter. It somehow strikes the casual reader that the author has loaded himself with so many facts that he has not always been able in the hurry of preparation to handle them in the happiest manner. But this is a minor consideration—the main thing is the facts. Slight discrepancies of arrangement are matters easily corrected or easily overlooked, and Dr. Talbot may congratulate himself that he has produced a work which no man can read without being impressed with the importance of the subject, and without being forced to think upon that subject himself. What more need be said in favor of any book ?

TRANSACTIONS OF THE DENTAL SOCIETY OF THE STATE OF NEW YORK. Twenty-fourth and Twenty-fifth Annual Meetings. May, 1892–1893.

The transactions of the two years are published in one volume, and the result is—as might be expected—a valuable addition to the literature of the profession. It would seem better, however, to publish the proceedings each year. Papers that were read in 1892, in some instances have a " threshed out " ring to them in the month of May, 1894.

A MODERN WIZARD. By Rodrigues Ottolengui. 16 Mo., paper 50 cts. Cloth $1.00 Published by G. P. Putnam's Sons, New York and London, 1894.

The author of this novel is well known to members of the dental profession, and he is fast making his presence felt to no less a degree in the literary world. This is the third novel recently issued from his pen, and the popularity attained by all three of them must be very gratifying to the author. In this latest one we trace a scientific vein as it relates to modern developments in medical science, and several suggestive hypotheses as to what may be expected in the future. No man could have written such a book without having been a student. Psychological phenomena play their part, and hypnotism is introduced in several instances to help along the movement of the plot. Altogether the work is ingenious, and demonstrates once more the versatility of the author. Without attempting a detailed analysis of the book we wish to call especial attention to such scenes as the murder trial, the auction sail on a New England farm, and the self-inflicted mania, brought on by inoculation, of the principal character in the novel. We shall look for future work in the same line from this author with interest.

PRACTICAL NOTES.

TO IMITATE GOLD FILLINGS ON ARTIFICIAL TEETH.

BY B. H. CATCHING, D. D. S., ATLANTA, GA.

Get, from a china decorator, some gold paste such as is used for decorating china. Apply it, with a small pointed brush, to the artificial tooth, in shape and position the filling is desired. Place the tooth in the furnace and fire to red heat. If the tooth can be watched during the firing, the flowing or fixation of the gold can be readily told. Two or three coats can be used. A firing is necessary for each coat. Polish with dry plaster on the finger, or with rouge.

MEMORANDA.

Dr. C. P. Pruyn has just taken a trip to Bermuda.

Dr. Joseph W. Wassall has returned from Russia.

Dr. A. W. Harlan has been appointed a member of the Illinois State Board of Dental Examiners. Let the profession cheer from one end of the State to the other, and then cheer back again.

MICHIGAN DENTAL ASSOCIATION.

The annuual meeting of the above society will be held at Ann Arbor, June 6, 7, 8, 9, 1894. The program and all necessary information may be had of the Secretary, Dr. J. Ward House, Grand Rapids, Michigan.

Cocaine may be tested for thus: Add to the solution to be examined a drop of a solution of potassium bichromate. If cocaine be present a precipitate will form which vanishes rapidly, and on warming, the liquid turns green and gives off fumes having a peculiar odor—that of benzoic acid.—*Lit. Digest.*

The Indiana State Dental Association will meet Tuesday, June 26, 1894, at Lake Maxinkuckee, Ind., for a three days' session. All are invited to attend. The State Board of Dental Examiners will meet at the same time and place.

G. E. HUNT, *Secretary*.

The Wisconsin State Dental Society will meet in annual session at Janesville, Wis., commencing Tuesday, July 17, continuing three days. A cordial invitation is extended to the profession to be present.

W. C. WENDEL, *President.*
C. A. SOUTHWELL, *Secretary.*

SECTION VI. Physiology and Etiology, American Dental Association sends out a request for papers, or for reports of any work done under the above head in State or local societies.

DR. H. A. SMITH, *Chairman*,
128 Garfield Place, Cincinnati, Ohio.

DR. L. E. CUSTER, *Secretary*,
28 East Third Street, Dayton, Ohio.

CONGRATULATIONS.

"Quid Nunc," our New York correspondent, celebrated his silver wedding on May 1. We extend our congratulations. The doctor writes us that he never was in better health, and that he is good for the practice of dentistry for another quarter of a century. This is the spirit that should permeate every member of the profession. No dentist should allow himself to "grow old."

On June 13 and 14, 1894, the South Dakota State Board of Dental Examiners will be in session at Parker, South Dakota, for the purpose of making examinations as to qualifications in dentistry, issuing certificates on diplomas, etc. Any who may desire to meet the Board at that time are requested to give thirty days' notice with a remittance of the fee (ten dollars) to the Secretary, at Yankton, South Dakota.

W. H. H. BROWN, *Secretary.*

GROWS HIS THIRD SET OF GRINDERS.

Samuel Swaney, of Washington Township, was in Muncie Ind., March 26, and exhibited his third set of natural teeth. They number thirteen and have been growing for the past three years. He is eighty-eight years of age, but is a hale old fellow and says that this growth did not bother him nearly so much as the first ones, many years ago. The teeth have only appeared in the front part of his gums, but they are more perfect than any he has ever had.—*Daily paper.*

"THE BUSY DENTIST."

A new candidate for favor appears in the form of a monthly just to hand with the above title. In its announcement it says: "We propose to make the journal, to the dental world, what the *Review of Reviews* has become to the literary world." It is published at Atlanta, Ga. The editor is T. P. Hinman, D. D. S., and it is published by the Mutual Printing Co. We extend a cordial welcome to this new aspirant, and hope its promoters may not fall short of the high mark they have set for themselves.

ILLINOIS STATE DENTAL SOCIETY.

The meeting of 1894, just closed at Springfield, was in many respects one of the most successful in the history of the Society. There was a large addition of new members and an unanimous and harmonious sentiment among the old. The best of good fellowship prevailed throughout and the meeting of '94 will not soon be forgotten. Following are the officers elected for the ensuing year: President,

Dr. J. W. Cormany, Mt. Carroll; Vice President, Dr. S. F. Duncan, Joliet; Secretary, Dr. L. Ottofy, Chicago; Treasurer, Dr. W. A. Stevens, Chicago; Librarian, Dr. Grafton Munroe, Springfield.

BAY ST. LOUIS, MISS., April 7, 1894.

Editor Dental Review:

At the annual meeting of the Mississippi State Board of Dental Examiners, April 3, 4 and 5, there were thirteen applicants, the successful candidates being J. R. Moore, W. P. Davis, W. O. Talbert, A. B. Kelly, A. T. Pierce and J. E. Johnson.

The system of the Illinois State Board, as recently published in the DENTAL REVIEW, was adopted, and worked very acceptably. No *oral examinations* were held, however, additional lists of questions being prepared on Oral Surgery, Prosthesis and Orthodontia. Each applicant who passed the written examination successfully was also required to clinic—the first time that this has been attempted by the Mississippi Board.

W. E. WALKER, President.

"RHYMES OF THE STATES."

Under the above title Dr. Garrett Newkirk, of Chicago, begins the publication in the May number of *St. Nicholas* of a series of rhymes illustrating the physical, historical and commercial characteristics of the different States of the Union. The articles are to be profusely illustrated, and each accompanied by a map. The general scope of the work with the unique features introduced would require too much space for detailed description, but from the advance sheets which we have been permitted to examine we predict no small degree of interest among the readers of *St. Nicholas* when these articles appear in their completeness. Dr. Newkirk has hereby demonstrated his diversity of talent. His articles on professional topics in dental journals are widely read and quoted, and now he has added something of value to the general literature of his country. We extend to him our heartiest congratulations.

SAN FRANCISCO, CAL,, April 9, 1894.

TO THE EDITOR OF THE DENTAL REVIEW:

Dear Sir:—Will you kindly insert the following in your journal, as it may be of interest to the profession at large, surely so to those of the Pacific coast.

Fraternally yours,

CHAS. E. POST, D. D. S.

Corresponding Secretary.

The Midwinter Fair Dental Congress will be held at San Francisco, Cal., June next from the 11th to 15th inclusive.

All reputable legal dentists of the nine States and Territories of the Pacific slope, together with those east of the Rockies, who wish to join with us, are expected and urgently requested to attend this meeting, bringing with them any and everything that may be of interest to the profession. Come prepared to give rather than to take. Interesting papers and clinics are promised from leading men both East and West.

A meeting is anticipated that will be second only to that held at Chicago last August.

The work is being carried forward by the following officers and chairmen of committees:

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OBITUARY.

WALTER JOHN GODFREY, D. D. S.

Dr. Walter John Godfrey died at Galena, Ill.. on April 19, 1894. He was the son of Dr. H. T. Godfrey, of Galena, and was a graduate of the Chicago College of Dental Surgery. He was about twenty-five years of age, and had been ill two years with phthisis. Dr. Godfrey was a most promising young man. As a student he was industrious, moral and conscientious ; as a practitioner he was earnest, honest and devoted to his profession. He was always retiring in his manner, was modest and unassuming, yet had a high degree of skill. His death is a sad bereavement to his friends, a loss to the profession, and especially to Delta Sigma Delta fraternity, of which he was a member.

RESOLUTIONS ON THE DEATH OF DR. W. H. EAMES.

The St. Louis Dental Society met on May 1st, at the Missouri Dental College. During the meeting the following resolutions were adopted.

Resolved, That in the death of Dr. W. H. Eames this Society has lost a valuable member, one deeply interested in the progress of his profession and for years a prominent supporter and contributor to its leading journals.

This Society gratefully acknowledges his services in advancing its interests and preserving the high standard of dentistry.

We extend our heartfelt sympathies to his bereaved family, and mourn with them the loss of a devoted husband and father—our brother—of whom it can be truly said that those who knew him best loved him best.

Resolved, That copies of these resolutions be furnished to the dental Journals for publication and a copy be sent to the bereaved family.

A. H. Fuller,
John G. Harper,
Wm. N. Morrison.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

THE HIGH LIGHT, SHADOW AND MIDDLE TONE OF HYPNOTISM.

BY GEO. V. I. BROWN, D. D. S., DULUTH, MINN.

Recognized to-day by the laws of different nations, by scientific and medical authorities, in literature and in art the world over, the state of hypnotic or magnetic sleep is no longer a subject for doubtful consideration as to its existence, but we find a wide diversity of opinion regarding its nature, the danger connected with its use, method of induction, etc. Especially is this true in the discussion with regard to dental operations, and we find ourselves confronted at the outset with three questions for consideration, viz.:

Is the prospect of practical usefulness bright as its advocates would tint it, in reality a sort of Jacob's ladder to hitherto undreamed of possibilities?

Is it dark with the shadow of danger and crime as threatened by its opponents? or,

Is the true color simply gray, a mass of plain, every-day facts, always present, and capable of much usefulness, or great danger, according to the treatment given at the hands of the operator?

The intelligent consideration of conclusions I have to offer seems to require a glance at the nature of this state, and the methods of those who teach its use.

We find its influence imprinted upon the earliest pages of history and interwoven with religious observances everywhere from the rhythmical movements of the body, with monotonous chant accompanied by the dull sound of his drum, by which the North American Indian prepares himself for untold tortures of the flesh, or the voodooism of the African, the beliefs of other savage races, and the paroxysmal ecstasy of the dancing dervishes, on through witchcraft, the casting of spells, casting out of devils, the trance state, and spiritualism, to the beliefs of modern christianity; for whether the actual place of residence of the Deity be in the heaven above, in the earth beneath, or in the waters under the earth, certain it is that no fitter position could have been chosen for the penitent to add hypnotic zeal to his religious devotions than the position of kneeling with the eyes turned upward, and the mind centered upon spiritual aspirations. Thus we find it alike in barbarism and civilization until we reach the wonderful performances of India, and the psychological possibilities claimed to be acquired by the lifelong self-abnegation, training and study of the Buddhist, doubtless far beyond the conception of a world scarred mind.

In the animal kingdom, too, are many well-known examples, as the eyes of the snake and its victim, the music of the charmer upon the snake, holding in check savage beasts with fixation of gaze by modern imitators of Daniel, in fact nearly all animals have been proven more or less susceptible, and even into the domain of vegetation magnetizers would carry the belief of its power.

Just here arises the question of intelligence and with it suggestion, the dividing line of the different schools.

The mesmerists believe in vital magnetism, biomagnetism and zoömagnetism; are the true followers of Mesmer, who, with his so-called magnetized trees, tubs, and other paraphernalia, set Paris wild in 1778; they use passes, friction or contact of the thumbs to transmit the action of the magnetizer to his subject, and believe that a magnetic fluid passes from the operator to the subject; that at will, bad magnetism can be removed and replaced with good or healing magnetism.

Charcot, of the Saltpêtrière, and his pupils, use the methods of Braid who, in 1841, discovered that by fixing the eyes upon an object, a state of sleep could be produced, and called this hypnotism. Stimulation of one or more of the senses by the loud sound of a Chinese gong, a flash of bright light, fascination by the operator's eye, a stern command to sleep, a bright object held above and to one side to produce quickly a feeling of fatigue by acting upon the centers of the brain controlling the muscles of the eye. Dr. Luys, of La Charité Hospital, Paris, uses revolving mirrors operated by clock work, and is thus able to hypnotize several persons together, and can occupy his attention with other matters during the operation.

Charcot divides the state into three stages, cataleptic, lethargic, somnambulistic.

In the cataleptic state, any position given the limbs is maintained, but easily changed by the operator. Sensibility to pain is lessened but the subject is open to influence through other senses.

In the lethargic state, complete insensibility to pain or other impressions through other senses, limbs are relaxed and muscular activity is more easily excited than in the normal condition.

In the somnambulistic, muscles become rigid upon gentle friction of the skin; limbs resist change of position and the subject is open to influence by suggestion.

Luys adds some intermediate stages, but the opinions of most other writers differ, many refusing to recognize at all these divisions, and others only admitting them possible with hysterical subjects.

The School of Nancy, under Bernheim, a pupil of Liébeault, who called attention to the therapeutics of suggestion and the possibilities of light hypnotic sleep, establishing himself at Nancy in 1866, recognizes three principal stages or degrees.

First, Drowsiness. Subject can resist suggestions only with effort.

Second, Hypotaxy, "Charme." Eyes are fast closed and cannot be opened; subject obliged to obey suggestions.

Third, Somnambulism. Loss of memory on waking; no recollection of events during hypnosis.

Liébeault and Bernheim give other stages dependent upon memory, but which are comparatively unimportant.

Suggestion is the foundation of the methods of this school. No mechanical apparatus is used. The patient's reason is appealed to by explanation and description; he is told that he is becoming weary and that his eyes are becoming heavy; that they are closing; that he is going to sleep, and finally that he is asleep and cannot open his eyes; an arm is raised and he is told he cannot put it down; if this cannot be done, then other suggestions are given.

This school undoubtedly seems to open the way to more general therapeutic value; a much larger percentage of persons can be hypnotized, according to Liébeault about ninety-two per cent.

Intelligent persons who can be made to understand the nature of the state, and what is expected of them are most readily affected, as are also soldiers and those accustomed to obey.

Every healthy person is supposed to be hypnotizable (example Sandow). Lunatics and idiots are most difficult and unmanageable.

With the methods of Charcot the hysterical and neurotics are best affected. Binet and Féré, of that school, claim that these only are the ones upon which all the phenomena of hypnosis can be studied.

The main point of difference between the schools is that Charcot and his pupils describe muscular phenomena which are believed to come without suggestion and others with suggestion, while the Nancy School believe that all may be accounted for by suggestion.

Scarcely any two writers quite agree upon the number of stages, or upon other considerations. Charcot, Binet, Féré, Luys, Liébeault, Bernheim, Moll, Hart, Sinnett, Eskridge, DuCourmelles and many others each have individual theories to advance; even those of the same school differ, especially is this difference of opinion noticeable in regard to the danger of its use and while granting even the ultimate fulfillment of hopeful expectations for its value in surgery and therapeutics, so long as this wide divergence of opinion exists, and while such good evidence of these dangerous features is shown without certain means of controlling them, surely it is only rational, prudent and safe to protest against its indiscriminate use by inexperienced, unscientific persons such as the rank and file in every profession are known to be.

My first attempt in this direction may be said to have been in 1879. A patient in my preceptor's office became hysterical and unmanageable in the attempted extraction of some roots, and was given up in disgust. I undertook to get control of that hysterical woman by exerting an influence through the control of my own mind, and was so far successful that she became quiet and was able to bear the necessary operation without apparent difficulty.

In 1889, upon the 28th day of August, I extracted painlessly some roots, and at later sittings performed other dental operations for a young man whose teeth were, in a normal condition, quite sensitive, while he was in a state of light hypnosis.

Again, upon the 14th day of September in the same year, I removed a partially devitalized pulp for a young patient whom I used as a subject for many later experiments and operations. In each of these cases none of the symptoms of the deep hypnotic states were present. The sleep was light and only of a few minutes duration, though analgesia seemed to be complete. The method employed was the same as described hereafter.

I mention the dates and cite these cases particularly, to emphasize the fact that after nearly five years' observation I find much to fear, although hypnotism has been recommended for use in our daily operations without hesitation, upon a personal trial of less than two years by the writer and will undoubtedly be commended by others upon even a shorter trial, and I am trusting to those years of experience to perhaps give some additional weight to the word of caution I would administer.

The methods by which hypnotism may be induced are almost without number, as are also the symptoms of hypnosis that have been noted and described by different writers, but while these are of themselves intensely interesting and their discussion might be carried on almost indefinitely, they are not necessarily a part of this discussion. I will therefore restrict myself to those parts of the subject which bear directly upon our interest as dentists, which are, I believe, embodied under the following heads, viz.:

Analgesia,
Therapeutic value,
Dangers and objections,
Suggestions for cautious, practical use,
Future possibilities.

In my practice I have had good results by gazing fixedly at the patient's eyes, passing my hand back and forth across the forehead and through the hair, repeating at the same time the words, "go to sleep," until a slight quivering of the eyelids showed the influence was beginning to be felt, then taking hold of the hands firmly and giving rather more of a commanding, yet low, tone to my voice as I said the words, ''go to sleep,'' increasing my insistence with each repetition until effected.

To the same method of procedure I have at different times also induced my patient to take long breaths and breathe rapidly, after having explained that rapid breathing sometimes reduced the sensibility to pain, or have allowed them to inhale alcohol, which is at least refreshing and cleanly; at other times with more intelligent patients have given full explanations, knowing that they would be rightly understood, or have adopted any little plan that seemed to appeal particularly to the peculiarities of the subject, which would help to bridge over the first few minutes during which I might fear the opposition of the patient's will. Lately, however, in my office I have adopted the plan of holding a mouth mirror, with my hand resting on the patient's head in such a manner that as they look at it the eyes are turned upward and slightly to one side; very soon a twitching of the eyelids begins and I say, "you are getting drowsy; your eyelids are so heavy you can hardly keep them open; they are closing; they are closed;" and as my patient closes them I place my fingers firmly over the closed lids, hold them there a few seconds and say, "you cannot open your eyes; you are fast asleep; you cannot feel pain," repeating the suggestions of sleep and that they cannot feel pain, until the operation is completed, though sometimes this continued repetition is unnecessary. Usually from two and a half to five or six minutes is sufficient to produce this light sleep, though occasionally it takes longer.

When the subject is lying upon the sofa or in bed, where no operation is contemplated, just rubbing the hands through the hair or better still, if practicable, a gentle, soothing massage will induce a restful slumber. The mouth mirror method is preferable because it does not necessitate the head rubbing, hand holding and other features of objectionable familiarity and does not tire the operator as does the effort to hold with his eyes the fixed gaze of the subject while its very simplicity makes it acceptable to some patients who might object to too much fussing about the matter, and the tired feeling caused quickly by the strain on the eye muscles makes most people realize more readily its possible effectiveness; it is simply combining the idea of Braid of the fixed gaze with the suggestion and other methods of the School of Nancy. I do not find that fatigue continues afterward any more when this method is used than where no muscular effort is utilized, as is claimed by those who favor other methods.

For general purposes in dental practice, the cataleptic state seems to be of but little value; it has all of the objectionable features intensified and but little of the commendability of the light hypnosis advocated by the Nancy School, in which analgesia seems to be easily produced, if not to the extent of complete freedom from pain, at least sufficiently to greatly reduce it, although Moll says: "The value of hypnotism for analgesia is not very great; it sometimes cannot be induced at all, and sometimes only after repeated trials." Yet my experience does not agree with this. I find it usually noticeable in some degree, even with very light sleep, and often complete insensibility to even the most severe pain when complete conciousness of what is being done exists. This I think is to be accounted for by the fact that most of the various symptoms which hypnotized subjects show, fascination, imitation, muscular phenomena, hallucinations, etc., are, as is admitted, chiefly the result of training, so that if freedom from pain be the object of the hypnotizer and he constantly endeavoring to produce such a condition, naturally he will be more generally successful in this particular direction than one more interested in other phenomena, and to whom analgesia is only an incidental experiment. I resist the natural impulse to cite many cases of painless operations at this point, because those given later on for other purposes will also illustrate the facility with which analgesia may be induced.

Esdale in his experiments at Calcutta, seems to have been more than usually successful, owing, perhaps, to subjects being already prepared largely by religion and inheritance.

THERAPEUTIC VALUE.

What is commonly called the work of the imagination as affecting the results obtained by methods of treatment, may be considered as in reality nothing more nor less than the result of suggestion.

It is generally conceded that sleep is not essential to suggestibility, instances being quite common where persons have been susceptible to suggestion while the eyes were open and all the outward appearances of the waking state present.

Binet and Féré make the following classification, of suggestion and say: "Some only are affected during sleep and disappear with a return to the normal state; others continue during the waking state; others, again, are produced in the waking state," hence it is argued that to be absolutely certain of the physiological effects of a remedy, care must be taken that no knowledge of what they are expected to be must be given the patient either purposely or by accidental overhearing of their discussion. We all are familiar with the administration of bread pills for morphia, and the result ; with the hypnotic influence exerted in mind and faith cures ; cures effected in religious ecstasy, and a thousand other forms in which this influence has been applied to the healing art. In the famous Keeley cure, aside from the influence of the bichloride of gold as a nerve stimulant, the distaste for liquor seems to be undoubtedly the result of post hypnotic suggestion.

In ideal mental photography, as explained by Henry Wood, where the inebriates, or the otherwise affected, are told to commune by themselves, with nothing to distract the mind, and look steadily for a certain period of time each day at a white page upon which is printed in large black letters such words as "Religion is health." "Have faith and you will be cured." "Whiskey is poison to soul and body," we see utilized autohypnotism and suggestion, which with continued practice would undoubtedly act post-hypnotically. Prescribing and the diagnosis of disease while in the trance state, we cannot notice ; the practice is too deeply buried in fraudulent imposition.

The substitution by suggestion to correct a mental disorder has been successfully employed with patients, though the difficulty here is the unmanageable character of the demented when hypnosis is attempted. Bannister in Hare's Therapeutics regarding hypnosis in the treatment of insanity says, "revolving mirrors or other mechanical apparatus as necessary for ordinary methods are not sufficiently impressive and require more steadiness than the insane possess." Hart and others, give but little value in the treatment of disease, but Binet and Féré, Moll, Bernheim and others recommend its use in the treatment of all kinds of pain not having anatomical causes, headaches, stomachache, ovarian pain, rheumatic and neuralgic pain, sleeplessness, hysterical disturbances, particularly paralysis of extremities, disturbed menstruation, somnambulism, dreams, loss of appetite, alcoholism and morphinism, neurasthenic ailments, stammering, nervous disorders of sight, perverted sexual feeling, agraphobia, writer's cramp.

In my own experience, when called to attend at the home of some sufferer at night, or one who is a prisoner through illness, other methods of giving relief being comparatively limited, it has frequently become necessary to direct my patient to retire. I have then taken a sponge and hot water, explained the soothing and sleep inducing effect of hot water (perhaps using a little exaggeration about the latter), and after a few minutes' sponging over the inflamed region, have left my patient slumbering peacefully.

In certain forms of nervous headache or backache, or pain so frequently present at the period of menstruation of women, I have seldom ever failed to give relief by gentle rubbing, beginning with a firm but not severe massage, and gradually lightening the pressure until the fingers barely touch the surface of the skin ; the effect is always soothing, and unless relief comes without it, sleep usually follows, from which the patient awakens much relieved.

I wish to distinguish between the slumber thus produced without perhaps more than an implied suggestion, and the hypnosis induced by the methods previously described. None of the objections I wish to bring forward seem to apply in such cases. There is no quivering of the eyelids nor are there present any of the nervous symptoms usually recognized. A much longer time is required by one process than the other. Sleep seems to come more naturally, and is not urged. The subject is not perceptibly open to suggestion, and would awaken if verbal suggestion were attempted.

Moll notices this difference, and describes the state by saying: "I have often found a deepened and somewhat long drawn respiration, and also a slight slowing of the pulse in hypnosis ; these were cases which bore a greater resemblance to natural sleep. There was no important spontaneous movement. It was also more difficult to induce movement by suggestion in these cases."

In the absence of regular medical attendance, I was called upon to relieve a woman writhing and groaning in great agony with a pain in the vicinity of the left ovary. After a few minutes' treatment as above described, she became a little more quiet, but said the pain still continued, though it was less severe. After this she soon fell asleep and did not awaken until twelve o'clock the next day. The painful period had by this time passed, and she was apparently all right.

Where fever is aggravated by nervous conditions, sleep thus induced has, in my experience, given very favorable results. My having assisted a hysterical young lady on board a yacht last summer to regain her mental and physical equilibrium by the aid of hypnotic suggestion, led to my being called upon to attend a little girl about eleven years old, who lay ill with typhoid fever, at a Lake Superior north shore harbor where we chanced to stop. Her physician feared she would not survive the night ; the temperature, taken before my entering the room, showed, as was to be expected, that it had risen as night came on, and was apparently continuing to rise. The patient was much emaciated, very nervous, and unable to sleep ; but conscious. After twenty minutes' treatment the temperature again taken, showed a fall of three degrees. I stayed until morning, keeping her asleep all the time. Whenever she awakened a little very gentle stroking of the forehead and hair put her fast asleep again. Her improvement followed steadily after, without further interference on my part.

I was myself put asleep by the sound of a piano softly played during an attack of typhoid fever, and it was repeated upon successive nights until sleep came naturally.

A gentleman whose partly erupted third molar and the attendant swelling had prevented sleeping and eating, came to me, the picture of misery. After local treatment, I asked him to try to sleep upon a couch in my office, but he kept attempting to swallow in a nervous sort of way; the process being painful, kept him awake. I passed my fingers over his swollen face and neck a little, and soon his efforts to swallow ceased. Sleep without verbal suggestion quickly followed, and continued all afternoon, regardless of other patients coming and going, until nature had been refreshed.

The effect of hypnosis upon the circulation is well known and used in the manner shown its benefit in nervousness and fevers is obvious. I have used it under the most trying circumstances as with persons sick in the woods, away from both doctors and remedies, and always the results were favorable. It should certainly find more general use than is at present accorded it among physicians. Its substitution for drugs in insomnia is certainly a decided improvement, while sleep is secured almost as readily.

I cite these cases to fairly show the bright possibilities before turning to the warning that I deem necessary by reason of the possible danger in its use.

Nearly all writers agree that hypnotism is dangerous. Foveau Du Courmelles, a firm believer in its value as a therapeutic measure, says that it cannot be employed with impunity. He considers a hypnotized person as suffering from experimental insanity; says that improperly used it may cause suffocation, convulsions, torpor, from which the patient cannot be aroused, paralysis, idiocy, madness and epilepsy. Two cases are cited of neurosis resulting from repeated hypnotic action. Medical records report a case of acute mania resulting from a hypnotization where the patient tore his flesh in his paroxysms. A case of general paresis is reported from the same cause. Hysteria and a weakened state of the nervous system frequently occurs. Dr. Kerr, in 1890, before the British Medical Society, says: "With the continued repetition of hypnosis, a jelly-fish condition results that makes the subject almost powerless to resist criminal or other influences.''

This part of the subject has been particularly well covered by writers in opposition to the use of hypnotism, but the following reasons given for Russian legislation against it quite briefly and in a general way cover the subject. They are as follows:

First. Hypnotism may cause hysteria, a neurotic state, or epidemics of hypnotic mania.

Second. It may become a school for the evil-minded and criminal.

Third. When its phenomena are not at the time rationally explained, they breed erroneous ideas and superstition.

Fourth. The fact of post-hypnotic crimes being committed.

In France, in this and in other countries, law has taken notice of the criminal possibilities, though the question of the existence of a will and whether without natural desire on the part of the subject, criminal actions can be instigated, is still an open question among authorities, but these are not the dangers that, in my opinion, we have to fear, and I wish to deal particularly with dangerous objections to the general use in dental operations.

The people who are lightly hypnotized, as described by the Nancy School, are, it seems to me, quite as likely to suffer from shock as the patients partially anæsthetized, the danger of which is too well known to need more than passing mention.

Many of my patients have reported some time afterward that though they felt the benefit of the hypnotic influence in assisting them to bear the operation, considerable physical exhaustion followed.

Recently I removed some nine or ten roots for a patient who was easily hypnotized, and upon interrogation afterward said she only felt ''the last one a little,'' yet the following day she returned looking jaded and worn, was very nervous and evidently had experienced more shock to her nervous system than would have occurred in a waking state. Of course its advocates will say that I should have given post-hypnotic suggestion to guard against this; that it was due to improper technical management upon my part, and as an answer to this presupposed statement, I bring forward the following experiments:

I operated quite successfully, so far as pain was concerned, upon a very good subject for hypnotic suggestion. Always however during the operation her hands became quite cold and clammy, face flushed, and she showed signs of nervous exhaustion afterward, notwithstanding the fact that I have awakened her, rehypnotized and suggested rest, freedom from nervousness, etc.

To test another method she brought with her a gentleman who has been very successful in giving her relief from severe headaches and had given her treatment for them by suggestion. He hypnotized her without using the mouth mirror or other external assistance, but the same symptoms, a flushed face and cold hands, were noticeable even before I began to operate, while under his influence no insensibility to pain was produced and the operation was abandoned for that day.

My third experiment was on the following day, when I told the patient that I intended to finish the preparation of the same cavity which was so sensitive the day before, but this time without attempting to produce hypnosis. I instructed her to be ready to raise her hand whenever the pain was felt and that I would stop so quickly she would not realize she had been hurt; thus, attention fixed upon the hand in readiness to lift quickly if pain were felt, she passed through the complete excavation of that sensitive cavity, without the slightest sensation of pain. She was quite wide awake all the time, none of the nervousness or unpleasant after effects before noticed resulted, yet that patient was as completely open to suggestion as on the former occasions.

The following incident, related by Moll, will serve to show that others have noted the objection I wish to point out. He says: "I once hypnotized a patient in order to open a boil painlessly. I did not succeed in inducing analgesia, but the patient was almost unable to move so that I could perform the little operation without difficulty." There we have the danger exemplified, patient conscious, can feel pain, but unable to resist. Who can attempt to measure the possibility of shock under such conditions in graver operations when so many instances of death from this cause, even under most trifling circumstances, are of record, when by good authority our attention is called to the fact that most deaths upon the operating table from chloroform have taken place in the early stage of its administration and death in many instances was undoubtedly due to shock from the commencement of the operation before complete anæsthesia had been produced or the sight of preparations for the operation while the patient was still partly conscious but unable to make resistance. In the face of this who will dare to say that consciousness of pain without power of resistance is not dangerous.

Unconsciously we, as dentists, are all urging our patients daily to undergo too much for their strength. Every dentist develops a power over, or at least the control of, his patients more and more all the time. Young practitioners have much more difficulty in getting patients to stand painful operations patiently than do those longer established in practice.

What more complete method of inducing a hypnotic state unconsciously could be devised than letting the patient back in the operating chair with a rubber dam adjusted and the range of vision limited to a few inches of the ceiling, or fixed, as often happens upon some bright object (chandelier or suspension engine, for instance) that might chance to be in view. The operator is naturally trying to give soothing words of encouragement, urging the patient to be quiet and to bear what may be necessary, and thus we find every day all the essential points, a fixed gaze, suggestion and personal influence, for the operator is necessarily in close contact with the patient. Is it to be wondered at that patients often feel dizzy in getting out of the chair and does this not account many times for exhaustion following dental operations ?

Repeated hypnotization is by every writer admitted to be dangerous, if the process be continued, the subject finally becoming so easily affected that any one and under almost any circumstances can exert the influence, or a particular object might catch the gaze, by reason of association or otherwise, and the patient be immediately thrown into a helpless condition.

At Saltpêtrière a girl in the act of stealing from a bureau drawer heard the accidental striking of the gong used to produce hypnotism; immediately she was unable to move, remaining until caught in that position. Hart tells of a young woman whom he put to sleep by having her look at an assumedly mesmerized candle, and every time she saw him afterward, whether at the dinner table, on the street, or anywhere else, was immediately overcome and would remain in stupor for half a day at a time. Let us consider for the sake of practical application, how many consecutive sittings are sometimes necessary for each particular patient. Remember that at intervals of a few months many of these patients will probably return and continue to do so at intervals for years. Add to this the thought of the vast army of dental practitioners daily and hourly hypnotizing their patients, and think what a terrible influence this might become. Add again the testimony of good authority that neurotics are naturally on the increase in our present conditions of life, and behold the appalling enormity of this thing, that we are lightly recommended to use as if it were a new engine, a new handpiece, or any other addition to our working apparatus.

Dr. Luys of La Charité claims that by giving a post-hypnotic suggestion to that effect, the subject cannot be hypnotized by other persons afterward, and this particular danger may thus be obviated, but Hart, after witnessing the various symptoms exhibited by Dr. Luys' subjects with bottles of alcohol, valerian, the different poles of a magnet, etc., presumedly illustrating the hypersensitive condition by which persons in the hypnotic state are supposed to recognize influences impossible to the waking state, took these same patients afterward and in the presence of well-known witnesses rehypnotized them notwithstanding their post-hypnotic suggestion to prevent it, and reproduced all of these symptoms with each patient under entirely different conditions, substituting water for the alcohol, pieces of iron for the magnet, etc. Thus is plainly shown not only the uncertainty of this safeguard, but the unreliability of experiments as well.

To sum up, finally I feel it safe to recommend hypnotic influence to the daily life of the dental operator with the following conclusive instructions:

Believe that hypnotism is a matter of everyday occurrence, that suggestion of every kind is constantly at work in its influence upon your patients through their every sense.

External suggestion to the sense of hearing, through the sound of your voice, the noise of engine or other appliances, sounds heard from other patients, etc.

Sight, by your own personal appearance, arrangement and cleanliness of office, too great display of repulsive looking instruments and other things which might appeal to a sensitive nature.

Touch, that nervousness may be caused through a trembling unsteady hand, calmness through firm, steady touch and movements in the operation.

Thought, through the suggestions caused by matters which appeal to the patient's intelligence to the display of general information and reasons for treatment given.

Autosuggestion as producing symptoms not to be accounted for, except as arising from the patient's own mind.

Accept for the present some truth in all theories advanced.

Assume that a sound mind and body are essential to the success of your exerting a healing and quieting influence. Cultivate such a bodily condition for the good magnetism you may give out, if for no other reason.

Let yourself believe that your mind can control the minds of others and the matter of their bodies too, if but you can control perfectly your own, and thus always observe gentleness and a calmness that forbids impatient gesture and speech under every circumstance.

Admit that fixed gaze, or the tiring of any particular part of the body through the nerve centers of the brain governing the muscles involved will produce hypnosis, or at least a suggestible condition of greater or less degree and frequently one or more of less danger.

Act upon the theories of suggestion by using them judiciously for your assistance. Cultivate the talent for hypnotizing, which means unlimited patience, and a faculty of becoming "*en rapport*" with your patient, knowing intuitively just the best manner of approach to enchain his attention and mental assistance.

Check the desire to rush hypnotic sleep into daily operations until we may know, first, positively under what conditions hypnotism may be used, with whom it is safe, and with whom it must be avoided. Second, how many times a patient may be hypnotized and in what manner, without fear of its weakening influence. Third, until authorities shall clearly define for us the difference between one who is possessed with an absurd or dangerous idea in a hypnotic state, the mind of one in all else sound save for the presence of the idea of a post-hypnotic suggestion and one suffering from an hallucination as the result of shock, sorrow, disease, or other mental disturbance to unseat the reason. Fourth, when it can be asserted positively that suggestions, perhaps unconsciously given, acting post-hypnotically, of a pernicious nature may not return even after a considerable lapse of time to cause crimes or bodily distress.

When these and other vital points upon which authorities are at present divided, are settled, undoubtedly pain will become a thing of the past, but perhaps after all we may find true the Buddhist idea that only through religious self-abnegation can such perfection be acquired.

It would seem that a carefully selected commission might do much toward laying down from time to time, the steps we might safely advance.

It is a difficult matter to sound a note of warning that may carry with it also both hope and encouragement, yet this I have tried to do. The warning seems much needed now but prudence will ultimately bring success, perhaps beyond the reach of present understanding.

Doctorate Address.*

By W. C. Barrett, M. D., D. D. S., Professor of Dental Pathology.

For the last time, the Class of '94 in The Chicago College of Dental Surgery is called upon to listen to an address by one of its professors. I might, at this time, perhaps, with some show of propriety, review the past, and present you with a résumé of that which has been; or, I might weigh you down with final words of advice as to your future professional career in life. I shall do neither. That which is behind you is irrevocable, and may not be changed. That which is before you will materialize in due season, and if you have given proper heed to the precepts of your teachers for the past three years, you will be prepared to meet it as it comes. If you have not, it is too late for me to attempt to remedy it by any further professional instruction. I shall, therefore, choose rather to attempt some inquiry into the signification of the ceremonies of to-day; to review the rise and progress of professional study, and the origin and source of the usually accepted ethical laws which are supposed to govern all professional men.

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*Delivered at the Commencement Exercises of The Chicago College of Dental Surgery, April 30, 1894.

In tracing the course of professional advancement, I shall not endeavor to go back of that remarkable movement in educational affairs which opened with the eleventh century, and which resulted in the establishment of schools which, in their modified forms, are existent to-day. Were I to do so, the whole of the time at my disposal might be spent in briefly considering the astronomical lore of the ancient Chaldeans, the literature of the Chinese, or the knowledge of physics exhibited by the Egyptians. Greece and Rome had their schools of philosophy, of religion, of letters, and of oratory. Indeed, they were, in some measure, the prototypes of the institutions afterward founded, but we need not advert to them now.

Christianity succeeded to paganism, and in the tenth, eleventh, and twelfth centuries, the church, which had its center at Rome, was all powerful. It had early foreseen the necessity for a priesthood that should be educated above the masses of the people. Theological schools had been founded, in which the neophytes were instructed, not only in matters ecclesiastical, but in the elements of law and of medicine as well. The priest then absorbed whatever of erudition existed, and became the supreme authority, not alone in matters spiritual, but also in temporal affairs. There were few, aside from him, who could read or write, so that all records, and all interpretations of them, were practically in his hands. The early Christian schools were church institutions, and were usually connected with some monastery or cathedral, religious instruction being the primary object, the other branches of the limited curriculum being chiefly taught to render the priest more powerful and more influential with the people in all the different walks in life. What little of medical knowledge existed was mainly centered in the ecclesiastics, who thus became the apotheosis of all that was mysterious.

Gradually the teachings of the ecclesiastical seminaries became broader, and students from all quarters flocked to the schools of Italy, which became the most famous of any in Europe. These pupils were mostly foreigners, and received but scant protection from the laws. They banded themselves together for mutual protection and sympathy, and secured an organization at Bologna, and this was the origin of the famous University of that city. Under their various masters, some were pursuing studies in philosophy, others in law, others in divinity, the advantages offered attracting new students, until ten or twelve thousand were gathered in that old Italian city. Though Christians, their text-books were almost exclusively pagan authorities, like Aristotle, Capella and Boëtius.

The study of medicine was first pursued as a separate science at Bologna, about the year 1200. This, in time, led to the organization of separate colleges, in the fourteenth century. They were endowed institutions, and students were furnished pecuniary assistance.

The University of Paris was founded in the thirteenth century, and it became the model upon which were organized the institutions at Oxford and Cambrige, in England. The student in the Paris University was a bachelor in name, for as in the early Catholic seminaries they were trained mainly for the priesthood, celibacy had become a tradition among seekers after learning. The term Bachelor, however, did not necessarily convey the same meaning that is attached to it to-day, but it was used to denote a pupil, as that of master did a teacher. The whole work of the early universities was to prepare a man for professional life, in contradistinction to that of trade or business. Thus, as early as the twelfth century, a distinct line was drawn between those who were educated, and who devoted themselves to professional affairs, and those who pursued the ordinary avocations of life. Those who had attended the schools and studied under the great masters formed a class by themselves, and had nothing in common with trade. They were bound by certain special regulations, and the traditions of the schools. Their rules of conduct were much more strict than those of other people, and a scholar might not descend to that which an ordinary mortal could practice. These traditions crystallized into certain fixed laws, which were the origin of the ethical regulations that obtain in all professions to-day.

The great English University of Oxford was originally a monastic school, and was under the direction of the monks until a comparatively late day. Its growth was gradual, its curriculum broadening with the progress of time. Wealthy men or organizations built halls about the seminaries, as residences for students. Foundations, or endowed separate colleges, were added from time to time, each of which was originally intended for some special teaching. University College was founded in 1249, by William of

Durham. Balliol College in 1263, by John Balliol, famous in Scotch history. Merton College in 1264, and thus college after college was added, the system of education being gradually broadened, each college opening up something new, until there were about twenty. All these were united under a university head, but each proceeding according to its own separate rules and regulations.

Reformations and improvements were from time to time introduced, not only in methods, but in the morals of the different colleges. The students who attended them were destined for professional life, or were the sons of men of wealth and rank. For centuries no university man might engage in trade, or hold and practice ideas or methods that were common to the business world.

That is largely the case in Europe to-day, and hence the shock to their prejudices when, as in America, those who have a university education go into business, and violate the ethics of professional life. University men were supposed to be "gentlemen;" that is, those who were above trades. They might associate on equal terms with the landed gentry and the nobility, while the most eminent merchant or manufacturer was debarred. This feeling was universal, and has continued even to the present time.

One of the great reforms in Oxford was brought about by John and Charles Wesley, and Whitefield, who commenced a movement that has revolutionized the world. They violated all professional and college traditions, by setting apart as preachers or clergymen men who were not university men, and this was largely instrumental in arraying against them and their new sect all professional men of every class. The Methodists in England to-day comprise very few of what are there called educated men, because of this introduction into a profession of those who had not been specially educated for it.

In America, the universities belong to four classes: First, those proceeding from original historic colleges, like Harvard and Yale. Second, those established by the different States, like Michigan and Virginia. Third, those avowedly sectarian, like Princeton and Trinity. Fourth, those founded by private benefactors, like Cornell and Stanford. Harvard was founded in 1638, and Yale in 1701. The latter was at first a Congregational college, but later it became nonsectarian. Our American universities are unlike the English ones, in that they are single schools, with departments for the purpose of affording opportunities for study in some special lines, while the great English universities are composed of separate colleges, the students and teachers of which are quite segregated.

The professional colleges, as distinguished from the literary, are the outgrowth of modern methods. Medicine, as a profession, as I have already said, was first organized in the University of Bologna, in about the year 1200. There was later a famous school of health at Salerno, in Italy, but until quite modern times, medicine was an integral part of a university education. In the old universities, and indeed it is largely the case in Europe to-day, the graduate of a university was supposed to be qualified to follow any profession, though he was expected to pursue certain special studies in his own field. In Germany, for instance, a university education is considered essential to a properly equipped professional man. Hence the dentist or physician who attempts to follow his calling without it, is not acknowledged professionally, and this accounts for the prejudice that there exists against the graduates of American medical and dental schools.

A university, then, in Europe, may consist of an aggregation of independent colleges, each with its separate faculty and students. But in most of them that faculty is not an organization such as exists in America. Students attend only the lectures that they select, and pay their teachers separately, instruction not being included in the college fees. If the student is to come up for a degree, he must go through a kind of prescribed curriculum, but he may confine his studies to any special course that he may prefer, and may enter and leave when he chooses, and study or not as it may please him. Their life at the university is a peculiar one, and although I have visited both Oxford and Cambridge, and tried to fathom the mysteries of their curriculum and organization, there are many things which only a long residence will enable one to comprehend.

In America, a university is a school with different departments, as of literature, art, music, law, medicine, physics, etc., but with a single faculty, all under one direction, the same professor not infrequently lecturing in several departments. It has always seemed to me that for purely instructive purposes the American university is most effective, although the pupil is not trained in self-government and habituated to self-reliance as in England or Germany.

I have already said that those connected with these early universities were divided into Bachelors and Masters, the former including the students and the latter the teachers. But the governors of the university of Bologna early saw the advisability of some form of distinction for those who had attained to eminence in learning. The title of doctor, from the Latin *doceo*, to teach, had been applied to certain masters, as a mere honorary appellation. It was adopted at Bologna as a special distinction, and was there first conferred as a third degree, superior to that of master, in the Faculty of Law, in the twelfth century. It is said that Bulgarus, a teacher of law at Bologna, was the first upon whom the new degree of Doctor of Laws was conferred.

The degree of Doctor in Divinity was first conferred at the University of Paris, some time after the year 1150, the earliest recipient being Peter Lombard, a celebrated ecclesiastic of Italy, who became Bishop of Paris in 1159. In England, the degree was introduced somewhere about the year 1200. For a considerable time it was confined to the Faculties of Law and Divinity. This was but the natural consequence of the supremacy of the Church, for these were the studies to which the most advanced students confined themselves, and as the principal avenues to advancement were through the Church and the State, ambitious men chose the studies of Law and Divinity, and they were followed by the great body of scholars. In fact, these were almost the only professions which afforded any opportunity for the ambitious mind, and the learned men were principally confined to them. They absorbed all the titles and distinctions procurable, and so for a long time that of Doctor was only conferred by these two faculties.

Some time in the fourteenth century, the Faculty of Medicine began to confer the doctorate, but at that time the profession of medicine was in a very crude condition. It was largely dominated by the priests, and little was known either of anatomy, physiology or pathology. The remedies used were too often supposed specifics, without therapeutic value, and charms and amulets played an important part in the practice. But some physicians were men of great erudition in literature, and it was chiefly in compliment to such as these that the title was first conferred in medicine.

The degree of Doctor in the Arts is still unknown in England. It smacks too much of the common people, for a man may rise to distinction without the possession of a university education, and the conferring of the doctorate upon such would have a tendency to break down class distinctions. In Germany, however, there is conferred a Doctorate of Philosophy, and it is a distinction that is highly honored. The Doctorate in Music was first granted in the universities of Oxford and Cambridge, in England, and within a short time it has been adopted in Germany.

In America, titles are much more common than in the old countries. Almost every man claims some distinction, and titles, military and civil, are conferred by courtesy. Especially has that of Doctor been sorely abused. It has become a mere mark of vocation, and whoever attempts the art of healing in any department claims and is awarded the title of Doctor, which, properly used, means a teacher. The chiropodist, the man who ministers to invalid dogs or horses, and he who pulls a tooth, is a "Doctor," irrespective of whether or not he can read and write. The cross-roads, peripatetic tooth-tinker, who has no conception of what a dental college is like, is accorded a title which of right belongs only to him upon whom it has been regularly conferred by competent authority. It is time that this practice was amended, and that the doctorate should be borne only by those who are entitled to it. Probably the practice of calling every dentist a doctor is too deeply rooted to be soon eradicated, but it were well if we could follow the practice in England, and call every man Mister upon whom the doctorate has not been regularly conferred.

The history of the American dental degree, that which this class has but just received, is known to most men. When, a little more than a half century ago, Chapin A. Harris, and his compeers endeavored to organize into a profession the somewhat heterogeneous elements that then composed dentistry, he was met by a refusal on the part of Medicine to acknowledge them, or to establish for them a curriculum of special study in medical schools. Recognizing the possibilities that existed in the practice, it was determined to accept the only alternative, and to establish separate and independent schools. In 1839, the first dental college was organized, and Doctors of Dental Surgery were first made in Baltimore. Since that time Medicine has acknowledged her young daughter, and departments of dentistry have been added to a number of the universities. Harvard, in establishing the first of these, did what it could to destroy the prestige of the Doctor of Dental Surgery, by establishing a Latin degree, that of *Dentariæ Medicinæ Doctor*, or Doctor of Dental Medicine, instead of Surgery. By far the greater part of our schools, however, retain the original degree, and are striving to bring it into an honored significance. The multiplying of degrees in dentistry is certainly to be deprecated, for each but adds to the confusion and detracts from the importance and dignity of that which alone should distinguish us.

The practice upon which the graduates of this college are about to enter is hedged in by certain ethical laws, or professional regulations, which cannot be transgressed without placing the offender outside all recognition, and submitting him to the charge of being a professional quack. These rules in appearance are somewhat arbitrary, and to him who has but just entered within the sacred precincts may appear unjust. Yet all are founded upon proper professional obligations, and are the result of necessity. If a profession is to retain its distinctive character, and if a degree of proficiency is to be secured, the entrance within its pale must be properly guarded, and the conduct of its members must be sternly regulated.

There are three great professions, Medicine, Divinity and Law. The first cares for the physical well-being of man, the second for his spiritual good, while the last looks after his vested and communal welfare. Thus the vital interests of all men are entrusted to one of these professions, and when the weight of responsibility is so great, common justice demands that commensurate care should be exercised to prevent the entrance of improper or unqualified persons. Hence, a proper term of pupilage is prescribed, at the end of which the student is granted a diploma, certifying to this fact, and formally admitting him within the precincts of the profession. This diploma is the only door of admission into Medicine, and no man, it matters not what his learning or ability, can be considered a medical man without its possession.

The door of admission into Divinity is through an examination by competent authority, after the pursuing of a proper course of study, and the formal induction into the sacerdotal office. In Law, the form is much the same. All professions must carefully guard their immunities against improper conduct on the part of those once admitted, and the laws to secure this form the ethical code by which all are or should be bound. The distinction between a profession and a trade must be carefully maintained, for that is the only means by which imposture and fraud can be avoided. In business, it is possible for the purchaser to examine the wares that are offered to him, and so to be his own judge of their value. The seller may vaunt them unduly, but there is a check upon him, because the article shows for itself. It is not so in a profession. That which is offered is special or professional knowledge, concerning which the purchaser can have no information. He must place himself in the hands of his professional adviser with blind faith, and there is no opportunity for him to know the exact value of the services to be rendered. The methods, therefore, which are quite legitimate to trade, must be prohibited the professional man, and hence he is forbidden to advertise or unduly vaunt his skill. Were this permitted the temptations to mendacity and lying would be irresistible to many men, and there would be no opportunity to expose the fraud until too late. Therefore, any member of a profession is forbidden to advertise in the public prints, unduly to vaunt himself, or to publish certificates, under penalty of being proscribed as unworthy a place in a profession. The rule is a necessary one, and must be enforced if there is to be any profession at all, or any such thing as professional honesty and rectitude.

Dentistry ranks as a profession. It is a branch of medicine, and in that rests its claim to the distinction. Although dentists have existed from the earliest days of civilization, yet until within a few years it has never been organized separately, but was practiced as a part of the great healing art, and as now, its only claim to professional honor was through the parent medicine. But do not let us plume ourselves too much upon this. It is not every so-called dentist who is practicing a specialty in medicine. You, gentlemen, will be what you make yourselves. If you confine your ministrations to the extraction of the organs which it should be your province to save, and to the manufacture of artificial dentures, you will be no more entitled to rank as professional men than the shoemaker, or the manufacturer of wooden legs. It has been my province, during your course, to stand as your teacher in that part of your duties which more closely connect you with medicine. When you take proper cognizance of pathological conditions, and set about the treatment and cure of oral diseases through the action of medicine, and by hygienic and therapeutic methods, you are practicing a part of medicine, and are entitled to rank as strictly professional men. The prosthetic department of dentistry, while quite as important from a dental professional standpoint, has no connection with the medical part, for it is something of which the parent profession has no knowledge, and which is not included within it. The dentist, then, should not neglect theory entirely, for if he does he severs the only tie which binds him to the mother profession.

The subject of fees or professional charges, is one that is of historical origin. Most men are aware that, in some foreign countries, in practice among the better class of the people, on the part of men of undoubted professional standing, there is no fee charged, but each patient of the medical man leaves at every visit a sum that is proportioned to his station in life, and his pecuniary ability. This is an honorarium, and not the discharge of a debt, and it is never given directly to the physician, but to his servant or secretary. On visiting the office of a man in high practice, this secretary will be found in an anteroom, and he it is who arranges for the interview with the doctor. Upon a table before this secretary will be found a dish which contains money. The visitor is expected when he comes out from the interview, to place in this dish the usual fee, or to hand it to the secretary, done up in a piece of paper. If this custom be not complied with, there will be no demand made for it, nor will a bill for services rendered ever be sent in, but possibly the patient will find himself or herself unable to obtain another interview, unless it be known that he or she desires to be received on the score of charity.

This custom has descended from the old feudal ages. Under that system the land belonged to the feudal lord, and the occupant of it owed fealty to him. He was obliged to render certain service to the lord, and was entitled in return to protection and assistance. The feudal baron stood in the relation of parent to the retainer. While the latter must fight the battles of his chief, he could with confidence look to him for assistance in time of need. If he were ill or wounded, he had but to apply at the castle, where his needs would be attended to as a matter of right. If he suffered injustice at the hands of another, the lord was bound to see him righted. His religious instruction was looked after, and in sickness and death he was certain of spiritual comfort. Thus the feudal baron stood to him in the separate relations of physician, lawyer, and priest, and was bound to render him service in either capacity.

But as these duties were, in most cases, either beyond the capacity and knowledge, or the leisure and inclination of the lord, he kept in his train a priest, who looked after the spiritual welfare and comfort of all, and who, being somewhat learned in the law, acted as mediator and judge in such unimportant disputes as were not of necessity referred to the chief himself. He might also have some knowledge of medicine, and so withal act as physician if the retainers were but few, or if they were many, perhaps a regular "leech," or physician, would be kept among the retinue, and to him the retainers might apply.

Certainly no fees or pay for such service could be demanded, for the baron was bound to care for his great family. The professions were thus sources of beneficence to the people, and were so regarded. There was no thought of paying for that which was a benevolence. But some grateful retainer might choose to make a present to his benefactor, and this might be accepted, although if it were considered in the light of payment for service rendered, it would be scorned on both sides. When the feudal relations were in after ages dissolved, the common people still looked up to the physician and the priest as their benefactors, and did not scruple to call upon them in their hour of need. But the doctor must live, and so the pious fiction of giving to him an honorarium or present by those who were able to do so, became the custom, while the poor people continued, and indeed still continue, to demand his services without thought of any remuneration.

It may therefore be seen that medicine has ever been considered a benevolent calling, and its most devoted followers have shrunk from the thought of placing its practice upon a sordid basis, and so make no pretense of a regular system of fees. The office of the priesthood is regarded in the same light, and all men are of right supposed to be entitled to their sacred services without expectation of fees. But as the priest also must live, his support is supposed to be derived from voluntary contributions.

I have thus endeavored briefly to consider the history of the professional relations which the members of this class are now assuming, that they may not enter upon practice without a comprehension of the solemn obligations under which they rest. Gentlemen, you should ever bear in mind the fact that you are to be separated from trade, and from all its methods. You are climbing into positions that are hallowed by the traditions of the centuries. You are the successors of men who in all lands and at all times have been held in special honor. You will possess privileges that are not extended to those who are engaged in the ordinary avocations of life. Medicine has adopted your specialty, when worthily practiced, as a part of herself. Theology looks upon you with respect, as of the same general guild. Law has extended to you immunities, and secured for you reverence in your professional relations. The world takes you into its confidence, and places in your hands important interests. Men send to you their wives and their children, for professional advice and assistance. You have no right to take upon yourselves these momentous duties without the proper qualifications. You are bound in all honor to keep abreast the advance of professional knowledge, that you may be prepared always to render the best service possible. Above all things, you will be despicable beyond conception should you take advantage of professional relations and confidential associations to compass any shameful or selfish ends. Your patients must of necessity trust you implicitly, for they visit you because you possess knowledge of which they are destitute. You are unworthy a place in the ranks of a profession if you betray that confidence by failing to give in every case your very best services. In all your professional relations, I charge you to be true to yourselves, your profession, and your Alma Mater, which will ever watch your future course with anxiety and solicitude.

The Elements of Success.*

By Alice Menges, D. D. S., Chicago, Ill.

It is pleasant to be here to-day. In this beautiful room, amidst fragrant flowers and the strains of sweet music. I am glad to meet so many eminent dentists and their friends. Glad to see in the audience before me, such a goodly number of our own students from the Freshman and Junior years. Glad, because of the presence of so many members of the Alumni of the American College of Dental Surgery. I am honored in addressing the Faculty, the Board of Directors and the Graduating Class of '94.

This is a busy world. This strange and subtle thing we call "Life," is filled with grave responsibilities, sacred duties, and high resolves. Journeying along its pathway we occasionally come to a Golden Milestone, where we may pause and rest.

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*Valedictory Address, American College of Dental Surgery, April 2, 1894.

In our life's journey we have come to such an one to-day, and in the brightness of this happy occasion, in the companionship of congenial spirits, as we pass this Golden Milestone, signalizing the graduation of this, the eighth class of the American College of Dental Surgery, we pause and bid you welcome!

All effective achievement is the result of ideas crystallizing around the nucleus of high motives. In proportion as the ideas are clear and the motives noble will the realization in the finished work be beautiful and useful. The Masonic Temple in its towering height and massive beauty existed in the mind of the Architect long before it took permanent shape in the structure that delights our artistic sense to-day. The Ferris wheel, one of the greatest wonders of mechanical art, was, a short year ago, a brilliant idea in the mind of its young inventor; needing only the opportunity of development to gain the admiration of the assembled nations. So, of *all* material things, they are first ideas before they assume "A local habitation and a name."

In our lives, we are all of us brought into contact with two worlds; the inner world of thought and feeling, and the outer world of action and achievement. Our relation to this outer world depends largely upon the way in which we govern the inner world. If one desires success and despises failure, he must look first to the proper regulation of the inner life before attempting to subjugate the outer forces of material and immaterial realities. As, in the contemplation of the world of nature our sense of harmony is gratified by the perfect adjustment between the laws that govern its actions, so, a glimpse into the inner workings of a well regulated mind warms our hearts and stimulates our souls by its manifestations of nicely balanced *thought*.

In the history of mankind, different eras have been characterized by different thought. The thought of to-day is that of progress toward a higher development. Already the thinking minds are beginning to taste the first fruits of the millennium. The charity of the present age is more effective because it is tempered with reason and judgment, and thus becomes more practical. Religion in this era is taking a stronger hold upon thinking minds, because it is learning to deal with living problems; and it is more universally adopted because it is based upon facts.

It is said that, "A tyrant awaits us all at birth, and some come in chained and some come in free." In this epoch, under the all prevailing belief in the *ultimate good*, we are justified in thinking that there are born into the world, far more free men than slaves.

Under these circumstances and with the present advantages under which we live, a man can make for himself, by his own thoughts, by his own endeavors, by his own works, almost any place he pleases, among his fellow-men. He can have almost *any* good thing for which he is willing to pay the price.

"As a man thinketh, so he liveth." As one's thought goes down deeply and rests upon the bedrock of knowledge, so does one's comprehension of the great laws of cause and effect become more thorough and effective. If the human mind be deeply imbued with a noble love of self, and acquainted with the essential elements of success, defeat and failure need not be feared, though they may sometimes seem to be near.

The laws underlying the successful life, though few and simple, are as immutable as the everlasting hills. They existed when the morning stars sang together, in the beginning of light. Although old, they are ever new; and obedience to them in the regulation of life will give results as accurate as the calculation of an eclipse; and as certain as the force of gravitation.

In order to meet the pressing needs of the present day, one must, first of all, *be a good animal*. It is not necessary to be a Samson or a Sandow. But he who neglects physical culture cannot hope for that perfect assimilation that brings with it the pure blood, the clear eye, the steady hand, and the fertile brain of the intellectual athlete. It is true that history furnishes us many names of personages, *great*, though bowed down with physical infirmities; such personages were great notwithstanding bodily weakness. The fact remains that fertility of brain accomplishes far more when it is united with strong physical endurance. The dentist of to-day needs to live hygienically and temperately, that he may the better be able to do scientific and effective work. Closely allied to good health, as one of the essentials of success, are good manners. There seems to be an impression in the minds of many that good manners are an indication of weakness, either mental or moral. This is simply a "modern mistake." Good manners are the outer semblance of the inner worth; and history teems with incidents of chivalry by means of which men have advanced their position in life. The coat which the gallant Raleigh threw into the mud for Elizabeth to walk upon, earned him many rewards of queenly favor. Columbus pleads with such infinite tact, such delicate persuasion and grace, that Isabella relinquishes her jewels; and a new world is discovered!

A physician may be ungallant and ungentlemanly; but he saves a noble life and is forgiven. A lawyer may be boorish and rude to the world at large, but his successful eloquence before judge and jury, may cause his faults to be largely condoned or even forgotten, but an ill mannered dentist ruins his professional reputation every day of his professional life.

Although one may be blessed with all possible energy of constitutional vigor, and may have the polished manners of a Chesterfield, if his morals be unsound, he is, for all practical purposes, *a failure in life.*

Good morals are like the main spring of the watch, the fuel in the engine, the bloom upon the grape, the fragrance of the flower, "the gold upon the steeple spire, the sunlight upon the ripening corn." Like the welcome sound of rain in desert lands, so does the influence of morality cool the fevered pulse of avarice and break the strong arm of temptation. The dental chair of to-day must be one not only of physical comfort, as far as possible, but of moral safety as well.

To these qualifications let one add a thorough preparation for his life work, and the sum of his success is nearly told. The old Hebrews were wont to say that, "he who fails to teach his son a trade, teaches him how to steal." What was true then is true to-day; and the first preliminary step in a life work is a good education. Education does not make the man, yet, many men, after they are self-made, feel sadly the lack of early educational training. Life is a warfare, education is only mental discipline, and we need all the discipline we can receive to enable us to meet the many emergencies. It is only the picked men and women, those sound in muscles and morals, and thoroughly trained for their life work, who make up the grand army of the reserve. That army, that in times of crisis, out of defeat brings victory! Many a life has seen its Waterloo on account of the lack of this discipline and training. While it is necessary that we have preliminary training before entering professional careers, it is just as necessary that we continue this discipline through life. Action is life. Stagnation is death. The dentist of to-day must be not only a gentleman—a lady—but a finished workman as well.

In this Heaven of success, like the Heaven above, there is no sex. It is possible for all. It is evidence of great progress that so many of the leading lights in the profession of dentistry, welcome women into this work, and that so many of the worthy dental colleges of this country open wide their doors to women students—not least among them—the American College of Dental Surgery. It argues well that women are permitted to come into the professional walks of life in the clear light of this nineteenth century. This beautiful "Carma" so marked by philanthropy and improvement. The entrance of the women is a very joyful one during such times as these. Such times! When the American flag is no longer stained by the blot of slavery. When the settlement of international disputes by arbitration has been substituted for war by the more enlightened governments of the world. When progressive spirits meet in parliaments, and discuss the unity of religions. When the nations of the earth have assembled in the beautiful "White City" bringing into it the glory and honor of their handiwork!

"There is a light about to beam,
There is a star about to gleam,
There is a midnight darkness
Changing into gray,
Men of thought! Men of action!
Clear the way!"

In order that men and women may enjoy rational freedom, and the social fabric be maintained as a whole, it is necessary that there be many trades and professions. It is also necessary that each individual fit himself for his chosen work. The Alma Mater of our choice has taught us dentistry; and we have assembled to-day to receive from the hands of our superiors the recognized right to practice that profession. It does not seem best at this time to discuss either the theory or the technique of our work. The high standing of the present American College of Dental Surgery, the superiority of the faculty, the board of directors and business management, together with the three years we have spent in this institution and the examinations we have passed, all go to show that we have tried to be faithful and have reached the first step in the goal of our desires.

The success of the dental colleges of the future depends upon three things—fidelity to the profession, thorough equipment for work, both theoretical and practical, and a wide and comprehensive *business management.*

The permanent upbuilding of dental education can only be attained by adopting that large and temperate view of men and institutions that marks the scholar and the gentleman. Dental legislation can best be promoted by regulating the colleges, rather than the individual dentist. In order to do this successfully, there must be the most perfect harmony between the State Boards, the college management and the lawmakers of the land. Sudden and abrupt reforms in dental legislation can only result in defeat and failure. The progress must be rational, reasonable, and *in touch with the masses.*

GENTLEMEN OF THE FACULTY :—The earnest student always entertains toward the able professor, a feeling of respect and reverence ; and to-day, in behalf of the present graduating class, and with this feeling of respectful reverence, we desire to extend to you our sincere thanks for the aid you have so generously given us in the preparation for our professional work.

We feel that there is no better way in which we can express to you our appreciation of your noble efforts in our behalf, than by making ourselves worthy of your professional esteem and confidence. Therefore, I only voice the sentiments of this class when I say to you, that it is our desire and our intention, to put into practice (as far as our environments will permit) the many earnest precepts, and the thorough instruction which you have from time to time so faithfully given us.

As the ocean is the aggregate of many inflowing waters—so is a well-equipped mind the result of varied sources of information. And to-day, as we extend to you our thanks, we desire that these thanks be extended to other efficient members of the dental and medical professions who have, in times past, been members of the faculty of this college.

And now, as esteemed and highly honored teachers, we, as a class, will say to you, "Good-bye, but not farewell." For we trust that it may be our privilege and our pleasure to meet you often as professional co-workers, during the coming years of future usefulness.

CLASSMATES.

We have worked together through the winter snows and summer rains of three long years. And to-day in this beautiful spring-time, when the earth is redolent with the exuberant forces of the coming year, we meet to say "Good-bye and God bless you."

In the earth, and in the air, we note the progress of the coming season. Let us adopt this spirit of progress, and enter the line of promotion. Let us strive for better things, both for ourselves and for our profession. There is much to be done and life is short. Let us not cease to study and work for a higher plane of professional life. Do not let us permit "the habits of the world to put out the fires of our ambition."

For those of us who have the opportunity and the will, it would be well to add the degree of medicine to our degree of dentistry; not that we may in any way attempt to usurp the prerogatives of the medical practitioner—our brother—but that we may the more intelligently coöperate with him in our work. There are many dental lesions having their origin in remote parts of the body; and the wider and deeper knowledge of the human organism will enable us to make a more satisfactory diagnosis to our patients and to ourselves. It would be well also to spend some time in the offices and laboratories of the great specialists in our profession.

Read the dental journals. Attend the dental societies. And *always* and *evermore* preserve the honor and integrity of the professional and ethical gentleman and lady.

Work, labor, strive, endure. Remember that the signal for "Rest" beats only at the grave, when we shall "Wrap our garments about us and lie down to pleasant dreams." And even then, let us hope that beyond the transition there is renewed activity. *Activity*, with enlarged capacities, and within a broader horizon.

THE RELATION OF THE PROFESSION TO OUR DENTAL COLLEGES.*

BY TRUMAN W. BROPHY, M. D., D. D. S., CHICAGO, ILL.

To present for your consideration a paper on this subject naturally leads us into a discussion on dental education. It is my desire to avoid as far as possible reference to matter which has been fully discussed, and deal with some new phases of the subject which, I believe, to be of paramount interest to the welfare of our profession. The influence exerted by our professional institutions of learning upon the professions, might well be compared with the influence of our public schools upon the people of our country. As the public schools are largely responsible for the character and intellectuality of the nation, so the professional schools are largely responsible for the character and attainments of professional men.

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*Read before the Illinois State Dental Society, May, 1894.

The dental colleges of the United States by concert of action have advanced the curriculum, so that it is to-day more systematic than in other professional schools.

The effort of the Association of Dental College Faculties to unify the course of study in the several institutions, while not entirely successful has brought the colleges closer together in the methods of teaching and the matter taught than prevailed before the organization of this body.

The extension of the course of study over a period of three years, has made it possible for students to bestow more time upon the practical phases of anatomy, histology, bacteriology, chemistry, technology, etc., besides becoming more proficient in operative and prosthetic dentistry. The changing of the course, therefore, from two to three years has not only met with the approval of the profession, but has been equally gratifying to the faculties; so this relation of our colleges to the profession has been most happy.

"It will not be doubted by any one that it is our solemn duty in the conduct of dental education to see to it that before a student is permitted to enter upon its study he has shown proper aptitude and has already acquired certain fundamental knowledge. It avails nothing to point to the rare illustrious men who have leaped at a few bounds from the plowshare to the front rank of scientific or judicial eminence, and who have served immemorially as instances to support the fallacies of those who from selfish motives or from ignorant prejudice decry thorough education. Let not the rest of us, only ordinary sons of toil, be misled by the hope of such exceptional careers."

The relation of our colleges to the profession in regard to making our students more proficient practitioners scientifically, as well as practically, is one upon which the colleges and the profession are interdependent. A practitioner may send to a college a student whose educational qualifications for admission are not of as high an order as they should be, and consequently his path to success is a most laborious one.

I cannot better express my ideas on the subject of preliminary education than to quote from Mr. J. Ernest Lane, Fellow of the Royal College of Surgeons, England, who, in an article on medical education and medical practice*, states that too much stress is laid upon the benefits to be derived from what is termed a modern education, and suggests that a judicious admixture of the ancient with the modern would be of more benefit than an exclusive knowledge of either the one or the other. He points out that anatomical nomenclature, and in fact nearly all the technical terms met with in the study of medicine are derived either from Latin or Greek, and that it is necessary to acquire at least an elementary knowledge of these languages in order to obtain an intelligent knowledge of their profession. As bearing upon this subject, he quotes the words of a distinguished member of the profession, who had recently given it as his opinion that, "if a boy destined for a profession, were to be taught nothing but reading, writing and arithmetic till he was 11, and after that nothing but Greek, Latin and mathematics till he was 18, at 50 that boy would turn out a more widely cultured, better read man than if in his early years he had been stuffed with geography, history, philosophy, and the two-penny half-penny fragments of chemistry, botany and zoölogy which constitute school science."

If the views of Mr. Lane were presented to educators of large experience in medical and dental schools, I have no doubt that, after deliberate consideration, they would be heartily endorsed.

As we look over the directory of American dentists and place a mark opposite the names of those whose writings have made an indelible impression upon our literature, and a profound impression upon the dental mind, we note how few have enjoyed the great privilege of a university education. Had such opportunities been offered and embraced, however, the sphere of usefulness of these leaders in dentistry doubtless would have been materially enlarged.

On the other hand, a practitioner places a student in college whose affluent circumstances and broad preliminary education seem to especially fit him for his long course of professional study. His funds enable him to live comfortably, his education renders his professional study comparatively easy, but is there not another qualification essential to the success of a dentist?

It is my opinion that a course in a manual training school and a certificate of satisfactory work from teachers in such an institution, would be a very important stepping stone in entering the dental profession. Such a preliminary course prepares the student to engage in the manipulation of metals, the handling of fine instruments, and the manual dexterity essential to his success as a dental practitioner. A thorough knowledge of anatomy, chemistry, physiology, histology, materia medica and therapeutics, bacteriology, pathology and surgery, indispensable as it is in rendering a man qualified to practice dentistry, would very poorly indeed prepare him for the duties of his profession if he had not the manual dexterity to skillfully practice operative and prosthetic dentistry. My experience as a teacher—although not extending over many years—has led me to the belief that all colleges should reserve the right to return to a student his fees and dismiss him whenever in the judgment of the faculty he cannot acquire the manipulative skill essential to enable him to practice dentistry successfully. To retain a student who by nature cannot acquire such skill and carry him on through a three years' course of study, and then reject him at the close of his final examinations, seems too unjust on the part of an institution to be excused.

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*British Medical Journal, October 7, 1893.

Again, I think a student should never attempt any pursuit, unless he has a special desire to make it a life work or his vocation. I have no faith in the success of an individual who will take up the study of a profession just for a makeshift, or for what money he may possibly see in it. His work must be pursued with that interest that comes with a love for it, and he must be prompted by the desire to excel, not stand among the mediocrity of his profession, but with a determination to reach the topmost rung of the ladder of professional fame. Opportunity, it is true, may have a great deal to do with that, but a man's will power has a great deal more. A student who takes up the study of dentistry should be impressed by his preceptor with the fact that he has undertaken one of the most confining, laborious and enervating occupations known. It is only by force of habit that the busy dentist is able to get the outdoor exercise necessary to preserve his health.

The necessity of imparting practical instruction to students makes it necessary to have a well equipped infirmary in every college, and patients upon whom all of the operations in dentistry are to be performed. The question of how to supply students with patients has taxed the faculty of every dental college when first organized; and then the profession have in many instances criticized colleges for accepting patients who were not in a financial condition to warrant their applying to a college infirmary for operations. It seems that a matter of this kind should be so adjusted between the members of the profession and the colleges as to be quite satisfactory. It is true that dental college infirmaries often receive and perform operations for persons who are abundantly able to compensate a practitioner for his services, but the question of the patient's financial standing cannot be easily determined by college authorities. On the other hand, it is equally just to say that members of the profession extract many teeth which might be filled with cement or amalgam in a college infirmary for a fee which the patient might well afford to pay. Many such teeth are extracted because the patient would not be able to pay a fee for filling them that would compensate a dentist for his services. Therefore, it seems to me that poor patients, who have their teeth extracted for want of money to have them treated and filled should instead of having them extracted receive a certificate to a college infirmary, issued by the dentist, stating that this patient's circumstances are such that he should be admitted to an infirmary and receive such treatment as is necessary.

This brings us to the question of the relation of the profession to our dental colleges. The colleges must have patients that they may teach practical dentistry. The colleges should not receive patients who are financially able to compensate dentists for their services. Members of the profession should not extract teeth which are susceptible of being treated and filled, on the ground that the financial condition of the patient will not permit them to spend the necessary time to treat them and put them in a healthy, satisfactory condition, but should in all such cases issue a card to such a patient and send him to a college infirmary, where such a card should admit him to treatment.

Having given the matter some consideration, I believe that not more than 20 per cent of the population of the United States employ dentists for the purpose of treating and preserving their teeth. The remaining 80 per cent do not engage the services of a dentist for any other purpose than for the extraction of teeth and the insertion of artificial ones. I do not make this statement from gathered statistics, but as an estimate made in a general way. Let us assume that there 800 dentists in the city of Chicago, with a population, in all probability, of at least 2,000,000 of people, and each dentist treats and fills teeth for 500 people during a year. This would make 400,000, or 20 per cent of the entire population of the city, the remaining 1,600,000, if this statement be correct, would employ dentists only for the extraction of teeth and making of plates. It seems unnecessary to state to this Society that the work devolving upon us, and especially to the residents of Chicago, in educating this 1,600,000 people up to the value of the teeth and the advantages to be derived by preserving them, is a greater work than the most earnest educator has contemplated.

The mission of the dental college has long been supposed to be for the preparation of young men to engage in the practice of dentistry. Its teachings have elevated dentistry and placed it on a higher plane than it otherwise could have taken, but its usefulness is by no means limited to the preparation of students for dental practice. In my opinion its most important work is in educating the public to an appreciation of the great benefits which are bestowed upon them by scientific and practical dentistry.

Many a young man is quite willing to assert that the nucleus of his practice was the patient whom he first met in a dental college infirmary.

The law governing the practice of dentistry in the State of Illinois has accomplished a great deal for the profession and for the public. The benefits that the profession have derived have been in a realization that men entering upon practice in our State have been required to present credentials authorizing them to practice or take a State Board examination. It is true that our law has certain defects which should be amended, and in speaking upon this subject I feel that it comes within the province of my paper, for it is the relation of the profession to the schools from which our ranks are augmented. I believe that the Illinois State Board of Dental Examiners has endeavored from the time that the Board was first organized up to the present to conscientiously discharge its duties. I am also aware that it is impossible for a body of men acting in that capacity to please every one, and what I shall say in regard to the relation of the Board to colleges and to the profession is not said in a spirit of fault finding. It is not with a view of hurting the feelings of any one, but certain facts confront us, and it seems that steps should be taken to correct what is generally regarded as an error. The National Association of Dental Faculties, by increasing the course of college study from two to three years, did so that young men might become more proficient in dental knowledge. It seems, therefore, that the portals of the profession should not be entered by a shorter path. It has transpired on several occasions that permanent licenses have been issued by our State Board to young men who have had but a single course of study; and so their further study has been discontinued, and further proficiency has not been acquired. I do not believe it is the desire of the State Board of Dental Examiners to lower the standard of the profession by admitting to our ranks men who should pursue their studies further and complete their professional education. The relation which the profession should bear to the colleges should be to aid them by counsel and friendly intercourse in the discharge of their momentous duty, and send to them only such young men as are qualified by nature and by education to intelligently pursue the study of dentistry. The practitioner's further duty is to support the infirmary, as far as can be, by sending patients to it who are unable to satisfactorily compensate them for their services, so that their students may have an opportunity to acquire practical knowlege and that "delicacy of manipulation which comes only with experience."

Another suggestion I might make to the profession is to visit the dental colleges more frequently and by their presence stimulate the students to make their very best efforts.

Next, the duty of the colleges to the profession should be to guard their entrances and their exits, admit only such young men as possess a good education, watch them carefully, advance them practically and scientifically, and in the event of their failure to become skilled in the operating room and laboratories, they should reserve the right to return them their fees *pro rata*, and advise them to engage in some other vocation.

Another duty of the colleges to the profession should be to require certificates from persons whose financial ability to compensate a dentist for his services is at all questionable, and upon such certificates admit them to the privileges of the college infirmary.

So then let the State Board of Dental Examiners, the National Association of Dental Faculties, the profession, and the colleges labor unitedly to advance our profession, so that our unprecedented achievements during the quarter of a century just closed may be rendered incomparable with those yet to come.

AMALGAM.*

BY T. W. PRICHETT, WHITEHALL, ILL.

We will introduce the subject of amalgam fillings by making our first clinic before the society. Will select two cavities and fill them. These will be typical of others of like form wherever found in the mouth. Our patient being in readiness, we invite him to a seat in our operating chair—and proceed first, to antisepticise our hands with soap and water. With our disinfected mouth glass, we begin our examination to find carious teeth. Yes, here is the first upper molar, with an extensive cavity in the mesial surface and extending upon the occlusal surface beyond the marginal ridge. Looking further, we find the second bicuspid decayed upon the occluso-distal surfaces in a similar manner.

With chisels and other suitable instruments, we will open up the cavities to view, and to facilitate the removal of the decay. The latter being done, several considerations are to be borne in mind at this stage of the case, viz.: Anchorage for the retention of the fillings, extending the cavity margins with reference to anticipating future decay, the restoration of proximate contact, and the preservation of the interproximate space by a proper shaping of the cavities to conform to these several requirements.

Having the cavities prepared, the salient features as to anchorage consisting of a broad cervical base and a pit or step in the central fossa, with or without retentive shape of the side walls, we are ready to fill.

The rubber dam will now, if not before, be placed in the usual way, and the cavities dried and sterilized.

As it is difficult to fill and finish two proximating cavities at one sitting, we will fill the bicuspid cavity temporarily with gutta-percha, and to serve also as a brace for the matrix while filling the molar cavity with amalgam. A thin piece of copper has my preference for a matrix, because of its flexibility and its adaptability to the necessities of contour and easy removal. It should be long enough to reach around upon the buccal and lingual surfaces about half way.

We will place our matrix in position and secure it by packing the proximate space with warmed Gilbert's stopping, extending it around bucco-lingually in sufficient quantity to cover in the ends of the matrix. If a clamp or separator is used, pack plenty of the stopping upon it to hold the matrix more securely.

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*Read before the Illinois State Dental Society, May, 1894.

We will now prepare the alloy. This I do by kneading in the bare hand with a finger of the other hand. The first guess at proportions of alloy and mercury should show an excess of mercury. We will add of the alloy until the proper working consistency is attained. This may vary a little, according to the form of the cavity to be filled. For contour—more mercury. For a simple or four-walled cavity—less.

In all cases, malleting should bring to the surface a visible amount of mercury. We will place a small pellet of the mixture in the cavity, and with a slightly oval, smooth faced instrument adapt it to the cervical wall by direct and rotary pressure; working it out from the central mass to the side walls of the cavity. This first pellet, and all others that come in contact with the walls, should be worked down thin, so that the purer alloy may be forced into the closest possible relation to these surfaces. Other pellets will be added and condensed with hand pressure, using instruments of as large face as the cavity will permit. When about one-fourth full will introduce a pad of fine bibulous paper and upon this place the plugger point and begin the malleting. The face of the instrument should be directed toward the buccal and lingual, as well as the cervical walls, to insure greater uniform density of the mass.

The general shape of the filling at this stage should be concave. The surplus mercury may be wiped away with bibulous pads, and the filling carried to completion with or without the intervening pads, using the mallet to the last. The cavity should be filled overfull about all the margins, to permit of trimming the filling to proper form, and the removal of the less dense outer surface. We will now remove the stopping, straighten out the ends of the matrix and gently tilt it back and forth until it will detach without injury to the surface of the filling.

Will trim and shape the filling approximately to the form desired, and make the final finish at a subsequent sitting. When the patient returns the first filling is completed. We wish to maintain the full width of the interproximate space, or perhaps to increase the width slightly, in consequence of closure for want of contact.

After replacing the rubber dam, will adjust a separator, and press the teeth apart a distance equal to the thickness of the matrix used, plus some allowance for finishing the proximate surface of the filling. Will adjust the matrix as before, and proceed with the filling as in the molar. In removing the matrix in this instance, it may be facilitated by a turn of the separator screws. Will now finish the filling as near to the desired form as possible, and remove the separator. The proximate surfaces of the fillings should come into immediate contact, and with a *free* interproximate space—the *ideal* form for comfort and safety. After hardening, any excess about the margins of the filling may be removed with finishing files and other suitable instruments. The method of procedure here described, may, as a general rule, be applied to occluso-proximate cavities of the bicuspids and molars of both jaws.

The intended purpose of the foregoing is to demonstrate that the acknowledged best forms to be given to fillings, can be made with amalgam, and by comparatively simple and easy methods.

All of us have observed that cavities with weak walls, having little or no supporting dentine, are liable to fracture under the force of mastication long before leakage could induce recurrence of decay. This danger may be reduced to the minimum by shortening the weaker wall, as in the case of a crown cavity in a molar, extending near to the junction of another surface. Very liberal grinding down may be indulged in, and instead of great strain against a weak, long wall, we will have a short wall as a base to resist the crushing strain exerted upon the filling.

The buccal and lingual angles of the cusps, when frail, may be cut away and strengthened upon the same principle—adequate anchorage of course to be secured in the most available portions of of the tooth, according to the circumstances.

Good preparation of cavities is just as essential to success with amalgam, as with any other material. The ideal cavity form for amalgam would be box-like, with slight divergence toward the axial wall, for retention.

Too much anchorage—or *undercut* may be as faulty as too little, tending to leakage and liability to fracture of the walls. Such cavities may sometimes be changed from irregular to simple form, by lining them with cement, and finishing with alloy.

We will now consider some of the situations when and where amalgam may be used with propriety. First, and broadly stated, in any and all the teeth, temporary and permanent—wherever you do not *wish* to use anything else. Second, in any and all cases where you *cannot* use anything else. Third, in bicuspids and molars, more frequently than in incisors and cuspids.

The first and second classification refers in the main, to teeth of inferior organization, large and irregular cavities, anything involving doubt of reasonable permanency, if any other material be used. This will include the filling of the incisor teeth of young persons *tentatively* with amalgam, if by so doing the form of the interproximate space would be better maintained—the fuller development of the process following as a necessary sequence. Subsequently when more favorable conditions supervene, such fillings may be removed and replaced with gold with greatly increased expectancy.

The third classification is a field less limited in choice of materials—bicuspids and molars, than any other, and it is here that amalgam has shown its highest capability for good. It is here also that its greatest failures have occurred—as when all reasonable conditions are absent, neither it nor any other material will save teeth for a great length of time.

I will name a few considerations governing the choice of amalgam for filling bicuspids and molars, viz.: (a) The choice of the patient; (b) the choice of the operator with the consent of the patient; (c) the ability of the operator to make good gold fillings; (d) the ability of the operator to make good fillings of amalgam; (e) when a good filling can be made with amalgam, and not with gold, then there should be but one choice; (f) when either would be doubtful and nothing else would promise better—well! I do not know.

All substances used for filling teeth have some faults, and no *one* of them can be used to meet all conditions and situations. Perhaps the greatest objection to amalgam is that of color--particularly so, when exposed to view.

All metals are open to some objection on the same score, with amalgam in the lead, as it does not even have the merit of constancy, in always turning black. Even if it always should turn black, that objection alone may not always stand, for who knows but that some day the arbiter of fashion may decree that it is the proper thing, and the yellow king may have to abdicate in favor of his darker rival.

The old controversy as to whether amalgam shrinks or expands in hardening, has not I believe, been authoritatively settled.

However this may be, it is patent to every one's observation, that leaky margins more frequently occur in fillings of amalgam than of any other.

I have commenced some experiments in lining cavities in glass tubes, and in teeth both in and out of the mouth, with several thicknesses of gold foil, and finishing with amalgam. Also intermingling pellets of gold through the mass of amalgam, with the hope of counteracting, in a degree, the tendency to leaky margins. The time has been too short, and the experiments too few, to predicate an opinion, whether anything will be gained by such methods or not. If nothing can be added to the physical character of this material to improve its faults, then we must go back to, and improve our manipulation, if we would exhibit better average results than have heretofore obtained. This I have little doubt the most of us can do, by the better preparation of cavities and better adaptation of the material in the cavities.

Having referred to some of the objectionable qualities of amalgam, it will not be unfair to say something of its good qualities. It is sufficiently hard to resist wear against the most vigorous mastication. It possesses "preëminent" working qualities, in most situations, being remarkably cohesive. It is easily condensed, and its wide range of adaptability to all forms of cavities is not surpassed by any of the metals now in use.

Nearly every practitioner must have need of some intermediate material that will enable him to meet a great variety of conditions and wants of his patients—not the least of which is their purse. Many persons who need and ask for our services cannot reward us for gold fillings, so we must have something as a compromise with which to extend useful service to the largest number. What else can you name that will serve this purpose so well as amalgam?

To summarize and close this theme, I commend to you the *three graces*—anchorage, density and form.

REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND LITERATURE.*

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILL.

The custom of reporting annually the advances made during the year past in dental science has been growing for some years in this and similar organizations. The writer does not believe in taking from the authors of "hints" and "compendiums" the subject matter which belongs more particularly to them. In deference, however, to the requirements of the standing rule, which says: "Whose duty shall be to report annually on the progress of science and literature as appertaining to dentistry and give a résumé of all that may be new and important," I submit the following: In science pure and simple great progress is to be noticed in bacteriology and allied subjects. The efforts now being made in some quarters to mummify pulps of teeth and preserve them *in situ* meets with some favor in certain quarters, but so far nothing scientific has come from the discussion. It will require more time and further experiments before it will be considered safe to seal a dead pulp in a tooth and place over it a finished gold filling destined to be permanent.

Nothing new has been developed in the etiology of pyorrhœa alveolaris, although many articles have appeared on the subject during the year. At least a dozen such articles have been published in one journal, *The International*, in a few months. Weil's admirable process of cutting hard and soft tissues is going the rounds in microscopical circles and has been well received, especially in Europe. As usual, much activity is seen in the laboratory products of antiseptics, hypnotics and antipyretics. Many such articles have only a short lived popularity. The ingenuity and avarice of the pseudo dentist and his local anæsthetic is receiving a rich reward at the hands of the weak-kneed, poorly equipped, semi-respectable hanger-on in dentistry. No public clinic is complete without the appearance of such a fakir and the competitive hanger-on-to-the-skirts-of-respectability always buys the only original secret local anæsthetic with the exclusive right to a town or county or State. Of course this is not science, but it is the truth, and science can wait awhile. Any dentist of moderate ability and a dental college education acquired in the past twenty years, who reads only one dental journal and buys one book a year, can relieve all necessary pain in dental operations from his accumulated knowledge.

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*Read before the Illinois State Dental Society, May, 1894.

The recent graduate, of course, is even better qualified to do this than his more elderly and old fogy frater. The principal work in applied science is in the field of orthodontia so ably handled by Farrar, Guilford, Angle, Case and Jackson in the East, and Goddard in the West. The work done by this sextette in the past year is better and will be more lasting than that in any other department of dental activity. There is nothing new in prophylaxis, or in the filling of teeth, except the gradual abandonment of the use of copper amalgam. This "fad" developed so rapidly and ran its course so wildly that the more competent and sober minded, only use it, in third molars, which is where it naturally belongs. None of the goods that I have used ever acted as well as the old original bought in England in 1878. Attention has been called anew to tin as a filling material. Tin in shavings, or cohesive tin is worthy a new trial. Care should be exercised in using sulphuric acid fifty per cent for opening difficult root canals. It should not too long remain in the tooth, and afterward the tooth should be well washed with an alkaline solution.

Prof. Miller has written somewhat exhaustively on the subject of green stains on the teeth which may well arrest your attention for a period long enough to admire his method of handling the subject. Practically, for daily use there are no results to the reader. The question as to the deleteriousness of the stains is left in the dark as he believes that the stain does not act in a causal relation to erosion of the enamel surface. The question has only been started and technical writers here have an opportunity to clash sticks with the author of microörganisms of the human mouth.

A subject which has received much attention recently is hypnotism, the further discussion of which as it relates to dental surgery it is impossible to foretell. Our own opinion is that it will not be practiced much under its present name by individual dental surgeons, although it may be used in public hospitals and infirmaries.

LITERATURE.

Three new dental journals have appeared in the United States in twelve months. *The Pacific Coast Dentist*, *The Busy Dentist* and *La Revista Dentista Americana*. One has laid down, become defunct. One consolidition has been effected. The new books worth reading are about as follows.

The National and United Dispensatories; Richardson's Mechanical Dentistry; Evans' Crown and Bridgework, new edition; Smale and Colyers' Diseases and Injuries of the Teeth; Miller's (new) Microörganisms of the Human Mouth; Frederick Hewitt's Anæsthetics and their administrations, and G. Viaus' work on the same subject. Catchings' Compendium is richer than usual in good matter, well selected for the practical dentist; Underwood and Braine have published a little book on anæsthetics which is of value to the English practitioner more than the American as he uses an anæsthetic about five times to one on this side of the water. Guilford's second edition of Orthodontia is practical and concise; Wharton's Minor Surgery and Bandaging is an excellent work; Roger and Godon have published a very good work in French on the dental laws of Europe. Claude Martin, of Lyons, France, and M. Arapayaa, of Helsingfors have each published works on buccal and nasal prosthesis that are far in advance in perfectness of detail and utility. A new edition of Wedl's atlas is out in English and Warnekros has a new work on development of the teeth.

There are four new editions of dictionaries, mostly medical, out in good style and nearly up to date.

In concluding this report, imperfect as it is, I desire to say that the work of the year now in press "Transactions of the World's Columbian Dental Congress," Chicago, 1894, will be one that will be worth the price of subscription. No report of the meeting so far published will be as complete because all reports are lacking the illustrations and authors' corrections. It does not matter so much what a dentist reads as how he reads it. If, with a full comprehension of the meaning of an author he will be benefited even though he may be on the other side of the question. I have often read seemingly useless books, and one or two I have in mind now that only served to comfirm me in the disposition to discern whether it had been "cribbed" or was inaccurate. It will not do an author much good nowadays to copy too much; elementary works are too numerous for a full grown practitioner to always read a borrowed description of the antrum before empyema is discovered or even to regale one with a list of chemical formulæ that may be found in every text-book. What is much more wanted are some results of solid thinking and actual personal experiments or experience. We have had too much of the "trying it on the dog" to use a common expression, in our recent text-books, and particularly in some of the journals. Fine writing is much admired but after reading some of the magazine articles on the "injurious effects of amalgam filling,'' and a series of articles on the "togetherum of where" published in a well-known and somewhat aged journal, we feel that some new inspirations are needed to inject a little virility into some of the work of the maudlin admirers of everything that is done by a certain well advertised mutual admiration society located some distance from the setting sun. In brief, if you make a discovery, print it; if you have an unusual case, report it; if you do some original work, tell how you did it but do not read a little bit about a subject and then rush into print and show your ears so every one can see them. The ostrich never did succeed in hiding his body by poking his head into the sand, nor can a scientist do this. As the years go by I am forced to the conclusion that a report on such subjects as science and literature can scarcely be more than a brief generalization of the most important work of a few workers and writers, and that the energies of our members can be better utilized in listening to and discussing something less wide spreading than either of the titles covered by this committee, on dental science and literature.

NEW BOOKS, 1893-4.

1. The testimony of the teeth to man's place in nature, with other essays on the doctrine of evolution.—Balkwill, F. H.
2. A practical treatise on artificial crown and bridge work.—Evans, Geo.
3. Orthodontia, or malposition of the human teeth, its prevention and remedy.—Guilford, S. H.
4. Praktische Zahnlepre zur Alters bestimmung der Pferde, nach der Natur gezeichnet.—Schwab, C.
5. Elements of chemistry and dental materia medica.—Cassidy. J. S.
6. Manuel pratique de dentisterie operatoire et notions elementaires d' hygiene buccale et de therapeutique dentaire à l'usage des medecins.—Nun, L.
7. Essais d' anesthesie locale en chirurgie dentaire au moyen de la tropacocaine.—Pinet Camille and Geo. Viau.
8. Les accidents de la première dentition.—Poinsot, P.
9. Formulaire pratique pour les maladies de la bouche et des dents.—Viau, G.

10. Letters from a mother to a mother on the formation, growth, and care of children's teeth.—Mrs. M. W. J.

11. A monthly periodical devoted to dental science and literature—the Pacific Coast Dentist.—J. D. Hodgen.

12. Die Entwicklung und Degeneration der Hartgebilde im Tierreich in ihrer Bedeutung für die Degeneration des menschlichen Gebisses.—Fenchel, A. D.

13. Die Krankheiten der Mundhöhle, des Rachens und des Kehlkopfes.—Rosenberg, A.

14. Diseases and injuries of the teeth, including pathology and treatment.—Smale, M. and J. F. Colyer.

15. Quinta dentizione in un fanciullo di dodici anni; memoria letta alla r. accademia delle scienze dell' istituto di Bologna nella sessione del 30 Aprile, 1893.—Ajutolo Giov.

16. Des resultats eloignès de la prothese immediate dans les resections du maxillaire inferieur.—Martin, Claude.

17. Transactions of the Odontological Society of Great Britain. Vol. 25. New Series.

18. Notes on anæsthetics in dental surgery.—Underwood, Arthur S.

19. Ueber die Pathologie der Zahnpulpenpolypen.—Frank, Karl.

20. Orthodontia, ou malposition des dents humaines; moyens préventifs et curatifs; traduction du docteur G. Darin.—Guilford, S. H.

21. Des injections tropacocainiques comme anesthesique local en chirurgie buccale.—Hugenschmidt, A. C.

22. Essais d'anesthesie locale, en chirurgie dentaire, au moyen de la tropacocaine, observations cliniques et experiences sur les animaux.—Pinet Camille et George Viau.

23. A practical treatise on mechanical dentistry.—Richardson, Joseph.

24. Lekzü po boljezniam penago dietskago, vozrasta.—Kassowitz, Max.

25. Unfug der zahnärztlichen Pseudo-Doktoren.—Wiede, J. H.

26. De la leucoplasie buccale.—Clémenceau de la Loquerie.

27. Tooth extraction; a manual of the proper mode of extracting teeth.—Gorham, John.

28. Anæsthetics and their administration; a manual for medical and dental practitioners and students.—Hewitt, F. W.

Operative Technics.[*]

By Thomas E. Weeks, D. D. S., Minneapolis, Minn.

CONTINUED FROM MAY REVIEW, PAGE 349.

CANAL TREATMENT.

(Blackboard Diagram.)

Opening into Canals.	Apply rubber dam. Open cavity or penetrate crown to pulp chamber. Remove decay. Enlarge point of penetration to the diameter of the pulp chamber.
Canals with recently devitalized pulps.	Remove pulp. Enlarge canals. Dry thoroughly. Fill canals.
Canals containing putrescent pulps.	Render inert the contents of canals. Remove contents of canals. Ream if necessary. Render aseptic. Dry. Fill, if there are no pericemental complications.

Having learned the *forms* of instruments, a knowledge of thei *use* follows sequentially. Gaining entrance to canals and cleansing them, brings into use chisels, excavators, drills, burs, reamers, explorers and broaches; chisels to break down enamel, excavators to remove decayed dentine, drills, burs and reamers to make and enlarge openings into pulp chambers, explorers to follow, and broaches to cleanse canals.

Before proceeding, instruction should be given on the rubber dam, and the students exercised in its application; first without ligatures or clamps, then with their assistance. The following rules should be inculcated as the basis of instruction in the use of the rubber dam.

When the cavity has been rendered aseptic in teeth having living pulps, the fluids of the mouth should not again be allowed to enter.

In pulpless teeth, when a pulp chamber has been penetrated for treatment, the fluids of the mouth should not again be allowed to enter.

Sufficient space should be left between the holes to allow the rubber to easily cover the festoon of gum between the teeth so that this point of gum tissue will not be strangulated in one or the other of the holes.

Ligatures or clamps should not be used unless absolutely necessary, and ligatures should be as small as possible.

Rubber dam should never be applied until it has been thoroughly sterilized. This is best accomplished by boiling.

PRACTICAL EXERCISES.

1. Applying the rubber without ligatures to two or more teeth.
2. Ligating, using the several forms of knot.
3. Applying the rubber on molar tooth and adjusting the clamp.
4. Carrying the rubber to position on molar tooth *with* the clamp.
5. Applying rubber to incisor or cuspid having labial cavity near gingival line, carrying it below cervical margin of the cavity and retaining it with copper wire.
6. Applying rubber on molar tooth and ligating glass beads in position for its retention.*

CANALS.

Gaining Entrance to Canals. If there is no cavity, or if existing cavities have fillings which it is not desirable to remove, entrance should be made at the point which will give the most direct access to pulp chamber, and leave the greatest strength to the tooth. The point where the drill should be inserted in each tooth is indicated in Fig. 181. If there be more than one canal the drill should be held as nearly as possible in line with the principal one. The initial opening made by the drill should be sufficiently enlarged with burs or reamers, to permit of perfect access to every part of the pulp chamber, and to all canals.

If there is a cavity in the tooth, entrance to the canals should be made through it. The first step should be the free opening of the cavity and the removal of all decay; the next, the opening into the pulp chamber or the enlarging of existing openings until the walls of the pulp cavity, the pulp chamber and the canals are continuous. The openings into canals should be as nearly funnel shaped as conditions will permit. Fig. 182 shows the form for each tooth; the labial and buccal views give the form where entrance is gained through a cavity, and the mesial aspects illustrate the enlarged openings made by the drill.

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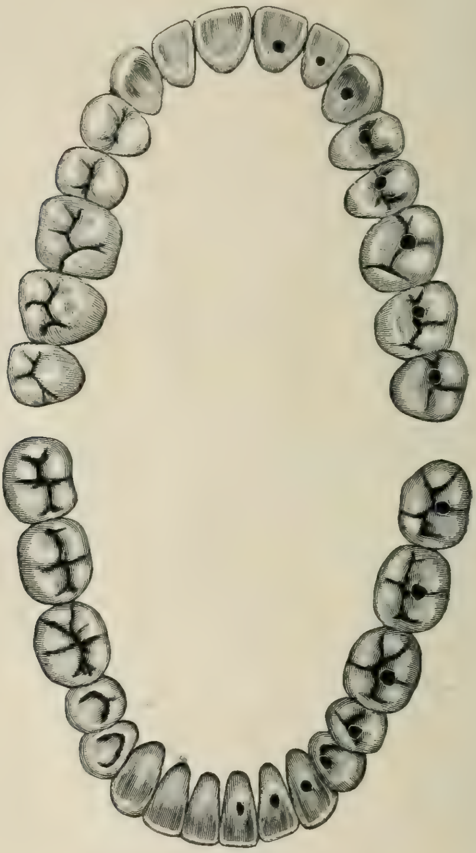
*The various operations in all practical exercises should first be performed by the teacher in the presence of the class.

PRACTICAL WORK.

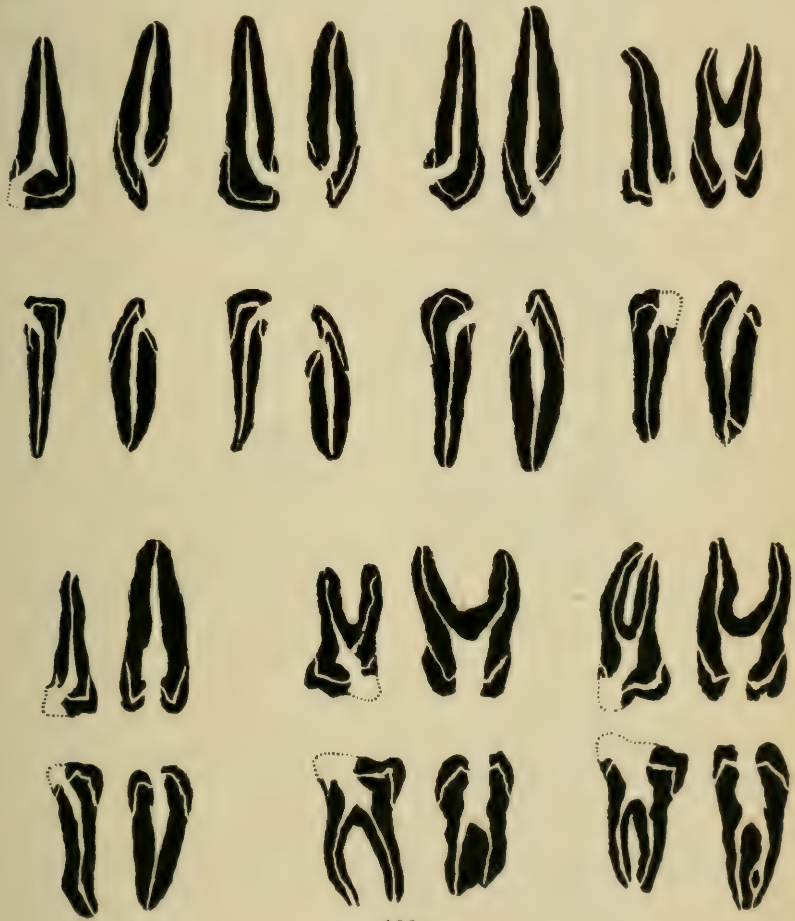
When the teeth are selected for the exercise in arrangement, care should be taken that each articulator contains a tooth of each class, having a cavity in which the pulp is penetrated. The student should now be directed to perform his practical canal work upon these teeth.



181.

For the initial exercises in the use of chisels and excavators the badly decayed teeth which are useless for filling or for sections may be utilized to good advantage for practice in enamel cleavage and the cutting of dentine, before the student uses these instruments upon the teeth mounted in the articulator.

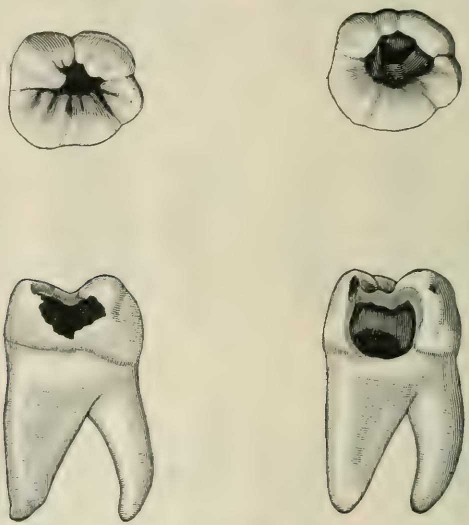
Opening the Cavity. The enamel should be cut away until the cavity is freely opened, as in Fig. 183. This should be done with enamel chisels, Figs. 12, 13 and 29. The two ways of holding the chisels are illustrated in Figs. 184 and 185. For this first exercise the student need not confine himself to the positions necessary when operating for patients, but he may approach the cavity from any point which affords the most direct access.



182

Removal of Decayed Dentine. All disorganized dentine should be scooped out. For this purpose spoon excavators are used, the strokes being made from the center toward the periphery. This exercise gives training in the use of the direct spoon, Figs. 50 to 52, and the rights and lefts, Figs. 65–68. The cutting should be continued until the point of entrance to pulp chambers is fully exposed.

Enlarging the Opening. If the cutting or reaming is done with a bud shaped bur, Fig. 91, manipulated by means of the revolving head bur holder, Fig. 82, this step gives some familiarity with the use of burs. The opening should be enlarged to the diameter of the pulp chamber, if possible. Up to this point the procedure is the same for both recently devitalized or putrescent pulps.



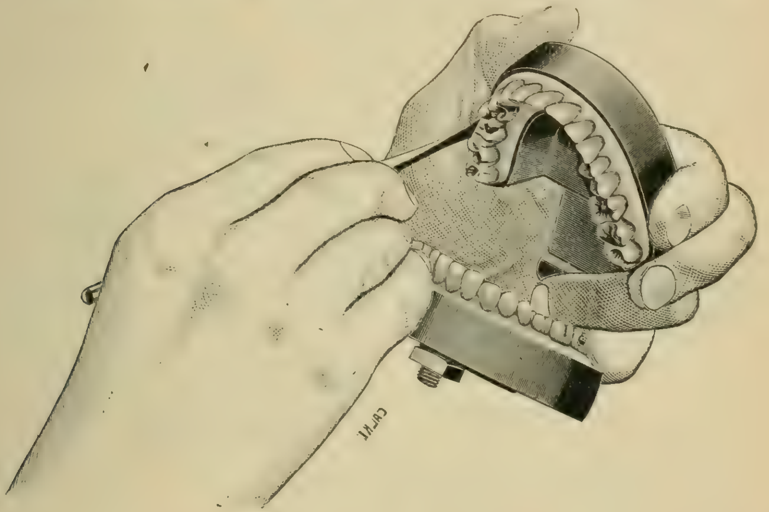
183

CANALS WITH RECENTLY DEVITALIZED PULPS.

Removal of the Pulp. This may be accomplished with the barbed broaches, Fig. 155 or 157 ; with the hooked extractors, Fig. 158 or 159 ; or with the Swiss broaches which have first been wrapped with a shred of cotton.

Enlarging Canals. If canals are enlarged at all they should be *reamed*, not *drilled.* The only safe instruments are those shown in Fig. 84 or 86 ; the latter have a safe or guiding point. The advantages of reaming are that it insures the thorough removal of all pulp tissue and renders less difficult the insertion of the filling material. Attention is called to the shape of the various canals as shown in the silhouettes of both longitudinal and transverse sections, and emphasis is given to the fact *that all attempts at enlarging flattened or tortuous canals are attended with the danger of perforating the side of the root.* Hence we draw the conclusion that the canals which it is *safe* to enlarge are those which are round and straight. When there is necessity for enlarging canals which are departures from this form, the greatest care should be exercised.

Drying Canals. In cases of recent devitalization, after the removal of the pulp and the enlargement of the canals, if the saliva has been excluded there is an aseptic condition, and the canals are ready for filling. Before its introduction, the canals should be thoroughly dried. Wiping them with absorbent paper points or broaches wrapped with absorbent cotton is not sufficient. All moisture should be evaporated with a current of hot air or by the direct application of heat, by means of one of the several forms of metallic root driers. Success in filling canals depends much upon the removal of moisture from the tubuli.

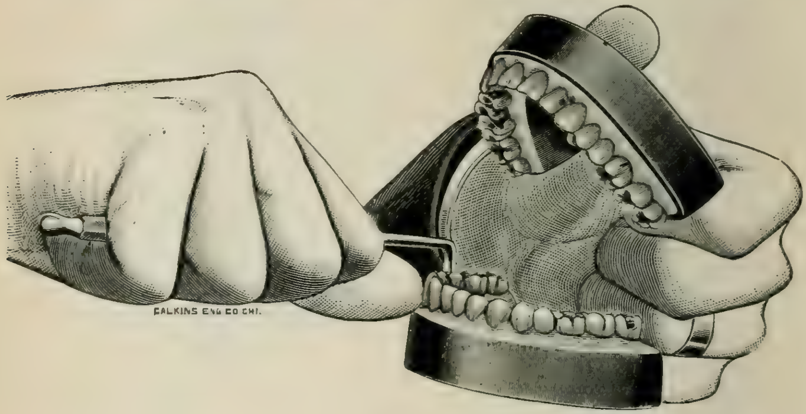


184

Filling Canals. The object is to seal the ends of the tubuli, and stop the apical foramina against the entrance of anything which might favor putrefactive changes. The requisites for a canal filling material are that it should be nonirritant if forced through the apical foramina; it should be capable of easy introduction into intricate canals; it should be indestructible under the conditions in which it is placed, and it should possess the power of preventing putrefaction of the remaining fibrillæ. The materials used are gutta-percha, wood, copper, gold or aluminum points, and chloro-percha, oxyphosphate or oxychloride of zinc.

CANALS CONTAINING PUTRESCENT PULPS.

Render Inert the Contents of the Canals. Canals treated under this head contain decomposed pulp tissue, which may be either moist or dry, but is always septic. The danger of crowding or pumping some portion of this septic matter through the apical foramina makes it advisable to render it inert, aseptic, before attempting its removal. This may be accomplished by the presentation of some substance, one element of which possesses a strong affinity for decomposed tissue. Two compounds of this nature are kalium natrium and hydrogen dioxide. The latter is the more desirable, as its action is less violent, and it does not leave a solid residue. If the preparation of $H_2 O_2$, known as pyrozone, three per cent, is applied slowly, without pressure, the contents of the canals are gradually asepticised, and the subsequent cleansing made easy.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185

Remove Contents of Canals. After the treatment with pyrozone, by means of hooked extractors and fine Swiss broaches wrapped with cotton, the canals are easily cleared of their contents. Always use the greatest care to avoid pumping anything through the foramina.

Reaming. The same rules apply as in the case of recently devitalized pulps.

Render Aseptic This is accomplished by sealing into the canals some antiseptic and germicide. Among the many, we notice bichloride of mercury, carbolic acid, oil of cassia, and Black's "one, two, three," the formula for which is :

Carbolic acid (melted crystals)	1 part.
Oil of cassia	2 parts.
Oil of wintergreen	3 parts.

Mix the oils and add the melted carbolic acid crystals.

When oils are used the tooth should be desiccated before their application. If the antiseptic has an affinity for water this is not so important. The application should remain in the canal for a sufficient length of time, and should be repeated until asepsis is assured.

Dry Canals. The rules given for teeth in which the pulps have been recently devitalized apply with equal force.

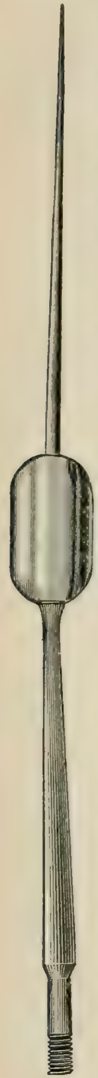
Fill Canals. If there is no pericemental complications the canals may be filled as soon as asepsis is complete.

PRACTICAL EXERCISES.

Wrapping Broaches. Thorough practice in covering smooth broaches with cotton is necessary to enable the student to use these valuable adjuncts without making pistons of them.

Select a small broach, lay a few fibers of cotton on the ball of the index finger, rest the broach upon it in such a way that the cotton will project a little beyond the point of the broach ; then roll the broach to the right, between the thumb and finger, bringing pressure first upon the point, continuing until the cotton covers the whole length of the broach. This prevents the point from being uncovered when inserting the broach into a canal and insures the even covering of the whole broach. Emphasis is laid upon the necessity for using small broaches, especially for cleansing canals of putrescent contents.

Using Broaches. After enlarging the openings into the pulp chambers of the several teeth in the articulator, which have been selected, moisten the dried pulps to soften them ; for this purpose dilute alcohol, cassia water, or pyrozone may be used. Care should be exercised not to insert explorers or other instruments into the canals before using the broach. The first attempt at extracting a pulp should be in an upper incisor or cuspid.



186

A *fine* barbed broach shculd be presented with its barbs against the walls of the canal, and inserted until its point reaches the apical end of the canal ; give one or two turns to the right and withdraw it carefully. The canals of the other teeth may then be operated upon in like manner. In canals where the barb fails to remove all of the pulp, or in very small canals, the small hooked extractors may be used. These will not permit of so much rotation. The canals should be further cleansed with pyrozone, applied with a platinum-iridium broach for the smaller canals, and a wooden broach for the larger ones. Japanese toothpicks serve this purpose nicely. Steel broaches or instruments should never be used with pyrozone.

Reaming. Such small canals as are round or nearly so, may be enlarged with the reamers Fig. 86, used in the revolving head bur holder. The exercise may be continued with larger reamers in larger canals which are supposed to have contained putrescent pulps. One or two roots may be prepared for the reception of a dowel pin, by enlarging their canals with the reamer Fig. 85.

Drying. The canals, which have been moist up to this time, may now be dried; first, with slender conical points cut from firm, fine grained blotting paper, then with absorbent cotton on Swiss broaches; completing the operation with the canal drier, Fig. 186.

Filling. Four methods of filling will be given. First, with gutta-percha points moistened with eucalyptus oil; Second, with gutta-percha points and chloro-percha; Third, with parafine and copper points; Fourth, with chloro-percha and gutta-percha point at apex, remainder of canal with oxychloride of zinc. Preparatory to filling, a student should make some chloro-percha by dissolving shavings of pink base plate gutta-percha in chloroform, and cut some small triangular pieces of pink base plate and roll into slender conical points on a warm glass slab. Roll some similar points of parafine. With a file make some very small, slender points of copper. Flood one of the larger round canals with eucalyptus oil;

dry canal and warm it with the root drier; dip a gutta-percha point in eucalyptus oil, ignite the oil and allow it to burn off, dip again in the oil and insert it in the warm canal, driving it home with a blunt, strong broach. Into another canal, pump some chloro-percha with a fine smooth broach; dip a gutta-percha point in the chloro-percha and force it home. In one of the very small canals, place one of the parafine points, melting it and causing it to flow into the canal with the root drier; heat one of the copper points and force it into the canal. Select a canal in which the pulp was supposed to be putrescent; fill its apical portion with chloro-percha and gutta-percha point, and the remaining portion with oxychloride of zinc.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, L. D. S., D. D. S.

ASSOCIATE EDITORS:

T. L. GILMER, M. D., D. D. S. GEO. J. DENNIS, M. D., D. D. S.

COLLECT YOUR BILLS. PAY YOUR DEBTS.

Dentists as a class are generally recognized as being notoriously bad business men. Whether the pursuit of the scientific and the ideal in their profession tends to crush out the commercial spirit, or whether the majority of dentists sought dentistry on account of their lack of a commercial spirit in the first place it would be difficult to determine. Certain it is that a large majority of the profession reach an old age minus the competence that should accrue to every individual who follows for a lifetime such an exacting and exhausting a profession as dentistry. That this is not in all cases due to faulty business methods may be true, but that it is in the greatest number cannot be denied.

This has become such a serious matter, both in its general effect upon the profession at large, and in the numerous examples we see of men grown gray in the service of their profession and who are yet obliged by force of circumstance to bend over the operating chair at a time of life when they should be reclining in an easy one, that we deem it worthy of more attention than is usually bestowed upon it. Dentistry does a sufficient service to humanity to entitle the individual who follows it faithfully, to an old age of ease and reflection. We know of no more pathetic sight than to witness an old man upon whom the infirmities of life have laid a heavy hand, toiling day after day at the nerve straining operation of filling teeth, all because his previous life of labor has resulted in nothing better than this for his sustenance during declining years.

There is a lesson in this for our young men, and it is to the young man especially that we would speak at this time. So many of them are starting out to practice at this season of the year when the colleges have turned out their annual grist, that we may perchance do much good if we can make them all stop long enough at the outset of their career to consider the importance of this matter. It is not all of life in dentistry to fill teeth well, to cure abscesses successfully, or to put on perfect crowns and bridges. The mechanical, the scientific, and the literary—in short the whole professional aspect of our work—must be supplemented by a close attention to the business details of practice in order to ensure a well-rounded measure of success in future life. Men of æsthetic taste may regret that this is so, and men of a purely scientific habit may find it difficult to govern themselves in accordance with such an idea, but whether we will it or no the exigencies of the present age force a realization of these facts upon us. This is a commercial age and even a calling like dentistry cannot quite ignore the material side of things.

To the young man we would urge the necessity of formulating business methods in the conduct of his affairs from the very beginning of his practice. He should avoid falling into the slipshod methods too prevalent among dentists. He should meet his business obligations promptly, and in order to do this he must attend strictly to the collection of his own accounts. His credit should be maintained inviolable, to accomplish which he must seldom ask for credit. He should early strive for a reputation for business honor and probity, for truly in this connection "a good name is better than great riches."

In the system of rendering accounts the dentist is somewhat governed by the custom in vogue in his locality, but the general rule should be to render an account very soon after it is contracted. Unless so stipulated in the arrangements, a bill should be rendered not later than the first of the month following the completion of the work. Patients should be made to realize that the dentist conducts his practice on business principles. No reasonable patron will take offense at the prompt rendering of a bill when it is known that this is the rule of the dentist. There are many arguments to favor the observance of this rule. An account that has been standing a long time is usually paid with more or less reluctance. This is not only true in a general business way, but it is particularly true of dental accounts. The value of the service rendered sometimes grows very vague to the patient as time advances. At the moment when he leaves the dental chair, after the insertion of a difficult filling, he is in a measure able to realize something of the energy and skill required on the part of the operator, and is usually willing to remunerate him accordingly. When he has had several of these sittings in the course of a few weeks, and is somewhat wearied of the dental chair himself, he is not likely to demur at a reasonable bill if presented while he is in this mood. But if the dentist neglects to send the bill for several months, the patient is apt to forget the amount of time and energy expended by the dentist, and to consider the bill excessive.

There are many things that might profitably be said on this subject, but the limits of an editorial prevent anything more than the mere reference to one or two points. We offer this as a business motto to the young practitioner: Collect your bills, and pay your debts.

Executive Councils in State Societies.

It is now several years since the Illinois State Dental Society adopted the system of relegating all business matters connected with the society (except the election of president, vice president, and members of the council) to an executive body elected for that purpose. The object sought was to do away with business in the general sessions to the end that the whole time might be given to the consideration of scientific topics. It seems that some question is arising in the minds of men at a distance who are unfamiliar with the true state of affairs, as to whether or not this plan is working to good advantage. It has even been intimated that the Illinois society contemplated the abandonment of the system, on the ground that it was proving a failure. If this be true, we of Illinois have yet to learn it. It is only another instance of the old adage that in order to gain news of home one must go away from home.

The facts in the case, so far as we are able to learn from a quite intimate association with the members of the Illinois State Society, go to show that this system is proving the most satisfactory innovation that ever was introduced into the society.

It is needless to say that no one system will be perfectly satisfactory to everybody. This is not in accordance with human nature. But while it has sometimes been charged that we have a strain of human nature even in the Illinois society, yet we are convinced that there is no one question upon which there would be such a unanimous vote of approval as this, if the matter were put to a test.

The Illinois society, be it known to those abroad, is *not* contemplating a return to the old system—it is too well satisfied with the new.

CHICAGO DENTAL SOCIETY.

We regret that through pressure of other matter we have been obliged to omit the proceedings of the above society for the past two months. Some of our readers have felt the omission, inasmuch as the monthly proceedings of this society have for long been a feature of the DENTAL REVIEW.

We promise them that the deficiency shall be made up in due time. Nothing of importance occurring in the society shall be overlooked, and all work done shall appear later on, even if we have to publish the proceedings of several meetings in one issue.

This society has done much good work in the past, and promises better for the future. It is the oldest dental society in the State, and probably the most influential local society in the west. The monthly attendance, it is true, is not proportionate to its membership, but this may be said of all societies. Possibly one reason why the Chicago Dental Society has not called out a larger attendance of late may be attributed to the place of meeting. It is manifestly inconvenient to many of the members, and while the Board of Directors assure us that it is the best they can do for the present, it is to be hoped that a more central location may be found by the time the society begins work in the fall.

DOMESTIC CORRESPONDENCE.

Letter From New York.

New York, May, 1894.

To the Editor of the Dental Review:

It May be, or not be. It so much depends on what our aim is. Many a man seeks to hit the mark, but how few keep their aim steady. This is the secret of our success—a steady purpose with an industrious application which ultimately becomes like a storage battery. This can be illustrated in many ways, but we will allude to only one at this time. We meet so many who give little attention to our literature. They scarcely know anything of our progress. Some may smile as we say "progress" yet we are progressing. There is no one thing that has been more helpful to us during our entire professional life, beginning in 1852, than the faithful reading of our journals, although we little realized this for many years. Of late we have come to find it beyond price. We venture to believe that no man of our age has been a closer reader of all our journals; and we do not forget what we have read. This gives discrimination in viewing the present day writers. "What the dentists are saying." Never were a few writing more brilliantly, and never so many writing so weakly. Never was it more truly verified that when men's mouths are open their measure can be taken. "Wisdom is above the price of rubies." Diamonds will always be real and command their value. There are times when we need to ground our dispositions. If we must grow old let us keep sweet. Some are not doing this.

We note the tendency of turning to special fields of practice and there has been one line of special effort which we think has been productive of good results. We refer to tooth powders and dentifrices. The time was when the practitioner as a rule compounded his own special powder and dealt it out with an aim to mercantile profits, but now comparatively few do this. All dental depots are supplied with so acceptable an article to most practitioners that they keep it in store for their patients. It has become quite a common thing for people to get their supply directly from the depots. We can only make this criticism, that some projectors have fallen into a disposition to be a little quackish, claiming that their preparation removes "tartar," etc., which all intelligent practitioners know to be untrue. On general principles this specialty has proved a lasting aid toward solving the problem of saving human teeth. We believe that much can yet be done by prophylactic dealing that has not been put into practice. It has been said that washes for the mouth and teeth were ineffectual in good results, but we do not think so. We believe that there is much room for development on this line, and even if there is a leaning toward secrecy in the formulæ, the public will be more devoted in the use of these washes if made attractive in appearance and flavor. This is a field for the specialist knowing the dental needs, rather than to let the multitudes be betrayed by gulling adventurers. We think we speak with wisdom in saying that the specialists can go farther, and produce a special line of dental medicines which can be formulated and become a boon both for practitioner and patient.

Dr. Ottolengui keeps his literary activity going. This time on "Modern Witchcraft," a book said to be attracting medico-lega attention.

"Our Relations to Medicine" will attract attention from editor Kirk's pen. He says truly, that some dentists are ashamed that they are dentists. So far as our observation goes we add—well they may be. We have heard men in open society admit that they avoided recognition as dentists outside of their offices.

The odontologics of Philadelphia can reflect much credit upon themselves by celebrating the fiftieth anniversary of Dr. Wells' discovery of anæsthesia. It is an opportunity to emphasize the importance and nobility of dentistry, and enforce a recognition from medicine that has never been conceded. This claim for Dr. Wells, for dentistry, stands on its proved merit. Let us have a general jubilee. We put in our oar for Dr. John M. Riggs. He comes in for a small part of notice in this matter. How is that? (We hear it echoed.) It is known that Dr. Riggs performed the first surgical operation ever made under anæsthesia; that is a fact on record. Well, what next? We are indebted to Dr. Riggs for the lifelike statue of Dr. Wells. This is another fact. Dr. Riggs made a request of the widow of Dr. Wells that he might go to the receiving tomb and take a mask mould of the face. This he did, and he preserved it for future expectations that some day it would be in demand. This mould was used by the artist. It was a moment of enthusiasm to Dr. Riggs as he stood by at the opening of the case in Bushnell Park, Hartford, Conn., on its arrival from Paris, where the statue was cast. We were present on this occasion, and saw the impressive expression of Dr. Riggs' face as he caught the first view of the face of his friend. He prattled like a child over it, for it revived so many pleasant memories. Dr. Riggs became a dentist because of the encouragement of Dr. Wells. It was from him that he received his practical dental education as a student. Young Riggs was at this period an "M. A." of Trinity College, Hartford, and a stonecutter by trade. His education was secured by money earned by school-teaching. There is so much in common with these two fellows in dentistry, that the eulogy of Dr. Wells will not be complete without its forming a part of the history. As we are in possession of it, we promise that it shall not be overlooked. A deal of unkindness has followed this history, and we are under promise to be faithful to our distinguished Dr. Riggs, who was much admired by us, because of an intimate acquaintance of thirteen years. We will ask just here, why has the memorial of him never been allowed to be published which was prepared by invitation of the Connecticut Valley Dental Association, and read before that body? This has been a query for eight years. It will not be a very pleasant task to answer it at this late period.

We notice one feature brought out in connection with the dedication of the new Post Graduate Building in our city that we think is very suggestive to us in connection with dental practice. It is that all the teaching is by demonstration—nothing didactically. We have emphasized that the demands of our schools is not platform oratory. Students know a good thing when they see it. A student can be educated more in one year by demonstrative teaching than he ever can by platform teaching.

The *Western Dental Journal* has turned on the water as a therapeutical agency. For some reason which does not appear, Prof. Harlan brought this out emphatically at a St. Louis clinic. Water is muddy there. New York does not like water; it is too full of animal matter, too nutritious. For this, the blame is laid upon the Tammany tiger.

There is coming a turn in affairs. It has been apparent that things could not go on as for the last few years. We are to be diverted and instructed by a "new era in dental practice." The first installment was given at the May meeting of the Odontological

Society by the indefatigable Bonwill. He is not a fool. Let young practitioners listen faithfully, for they are the ones who will need the instructions. Older men "have always done it." They said so, and Bonwill only smiled. He never carried himself more blandly. Let him keep this up and he will laugh last, and best. Dr. Bogue told him he did not know it all, that Philadelphia had theory and New York the practice. A wise motion prevailed. It was voted not to discuss the views of Dr. Bonwill until after they had appeared in the journals. We reckon that Dr. Bonwill gave his text before congress and he is going to stick to it. That articulator that he gave the profession at Chicago in 1893, as he said then, and emphasizes now, was the best thing of all his gifts. If he does not know it all, he may perchance give us the principles that lie at the foundation and then tell us how it may be demonstrated in practice. The Midwinter Congress, at California, will come in for a share of Dr. Bonwill's attention, and the October meeting of the First District Society of New York will also get the fuller text in pictorial illustration.

We say to our genial friend, J. Foster Flagg, "Be of good cheer." Gutta-percha is going to have an intelligent hearing, and his failure to get a respectful attention before the Odontological Society a few years ago will now be compensated for. We are to find out that the qualities that have been hid in red gutta-percha have not yet gotten a lodgment in our perverse minds. Of course many of us do know that it has rare qualities as a stopping for toughness, but when it is claimed that it has a mission in scientific results by securing a better occlusion and masticating surface against the inroads of pyorrhœa, well may we say, "listen."

M. Zola in his nerve thrilling story of the Lourdes, being published in the *New York Herald*, makes pale all past attempts at realism. This story will prove particularly interesting to all who deal in the art of healing. We are not able to cull anything of real helpfulness to the needs of humanity. Still it will be a diversion, and possibly by this means it may turn some tired brain into a change of thought. Too many dentists are overworked, often in labors that have no noble aim.

Another "new era in dentistry"—a traveling school of prosthetic dental teaching, by Dr. Parmly Brown. This will prove a boon to dentists far removed from such privileges. Dr. Brown makes use of his visit to San Francisco Midwinter Dental Congress and to the University of California Dental Department for Clinics, after visiting several other cities for the same purpose. This shows energy unusual. The faculty are wise in giving their students this advantage. These things are coming to the front and practitioners desire to meet the demands that are maturing everywhere. All cannot come to Chicago and New York for special services. These interchanges of association throughout the country are bearing fruit that will remain. The Connecticut Valley Dental Association holds a meeting extraordinary in June at Holyoke, Mass. This society carries the vim and brain of New England. Dr. Norman W. Kingsley is to be their guest, and gives a paper on "Cleft Palate." This society has shaped the progress of New England dental practice for the last twenty-five years.

The air fairly bristles with society energy during the coming months. New Jersey never has shown more activity than is now illustrated by its chairman, Watkins. We catch the voice of the long distance telephone, and display the wise and attractive list of subjects, seldom before brought out: Drs. Faught, "The Possibilities of Systematic Treatment for Dental Diseases." Geneese, "Effect of Mallet Force Upon Tooth Structure." Maxfield, "The Best Methods of Destroying Pulps." Burchard, "Science and Pseudo Science." Cravens, "The Sixth Year Molar—a new phase of an old subject." Haskell, "Fifty Years in the Dental Laboratory, as I Have Seen it." Callahan, "Sulphuric Acid for Opening Root Canals." Burke, "Ethics." Smith, subject to be announced. Mitchell, London, Eng., subject to be announced. Johnson, "The Management of Pulpless Teeth." Cryer, "Facial Neuralgia." Van Woert, "Blackboard Chalk Talk." Maxfield, "Will Demonstrate the Removal of a Pulp by Cocaine, Painlessly." All this, together with Ashbury Park attractions, sea bathing, first-class hotels, etc., is hard to resist. QUID NUNC.

CHICAGO, June 1, 1894.

To the Editor of the Dental Review:

In the article by Dr. Ottofy on page 322 of the May number of the REVIEW, occurs the following: "Force from a plugger point will be expended in the direction in which it has been given its impetus and none other, the law of physics governs that point beyond the intervention of any theory of ours."

For the information of some that are interested will the Doctor kindly give the law that governs in this case.

R.

PAMPHLETS RECEIVED.

ARTIFICIAL TEETH. Things to be thought of by those who wear them. By. Dr. L. P. Haskell, Chicago, 1894.

A pamphlet of 24 pages, practical and to the point, as are all of the author's writings.

MEMORANDA.

Do not forget the American meeting at Old Point Comfort in August.

The New Jersey State Dental Society holds its twenty-fifth anniversary meeting at Ashbury Park, July 18-20, inclusive.

Dr. W. G. A. Bonwill, of Philadelphia, passed through Chicago recently, on his way to attend the Midwinter Fair Dental Congress.

The management of the Indiana Dental School are to be congratulated on their elegant new building. It will be completed in time for the fall course.

Dr. H. P. Smith, recently instructor in prosthetic technics, Chicago College of Dental Surgery, has just left for Bombay, India, to engage in practice with Dr. Gheesta, a long established practitioner of that country.

OFFICERS OF IOWA STATE DENTAL SOCIETY FOR 1895.

President, J. S. Kulp, Muscatine; Vice President, E. L. Brooks, Vinton; Secretary, F. T. Breene, Iowa City; Treasurer, A. R. Begun, Des Moines.

Drs. J. A. Robinson, (venerable "Uncle Jerry,") of Jackson, Michigan, and J. H. Martindale, of Minneapolis, Minn., were guests of the Odontological Society, of Chicago, at its May meeting. Each read an instructive and entertaining paper.

MISSISSIPPI BOARD OF DENTAL EXAMINERS.

A new board has been appointed in Mississippi consisting of the following: Dr. G. B. McHenry, Grenada, President; Dr. L. G. Nisbet, Aberdeen, Secretary; Dr. E. E. Spinks, Meridian; Dr. J. B. Askew, Vicksburg, and Dr. C. W. Robins, Magnolia.

The following resolution was unanimously adopted by the Iowa State Dental Society:

Resolved, That the Iowa State Dental Society extend to Dr. Louis Ottofy and to H. D. Justi and Son, their sincere thanks and appreciation for the manner in which they have formulated and published the joint transactions of the Iowa and Illinois State Dental Societies for Eighteen Hundred and Ninety-three.

NEBRASKA STATE DENTAL SOCIETY.

The following is the list of officers of the Nebraska Dental Society: President, H. W. Shriver, Omaha, Neb.; Vice President, W. A. Ivory, Wayne, Neb.; Recording Secretary, J. S. McCleery, Beatrice, Neb.; Corresponding Secretary, O. M. Huestis, Nebraska City, Neb.; Treasurer, J. H. Cole, Norfolk, Neb. The next meeting will be held at Norfolk, Neb., the third Tuesday in May, 1895.

We are indebted to Dr. J. Austin Dunn for the privilege of examining a rather unique work published in 1833. It is entitled "The Family Physician and Guide to Health," and was written by Dr. Daniel H. Whitney. The chapter on "The Teeth" contains some quaint expressions that scarcely harmonize with the teachings of to-day, and yet when we read that caries of the teeth "is most generally the effect of external causes," and when we see bridge work advocated much after the existing principles of the present time we are led to the belief that there are some ideas in dentistry that are not so modern after all. We believe it is Dr. Dunn's intention to turn over the work to the McKellops library.

The American Dental Society of Europe, will hold its nineteenth meeting at Geneva, Switzerland, August 6th, 7th and 8th, 1894. Last year this annual gathering was omitted, as many members wished to attend the Columbian Dental Congress. American colleagues who may be taking a summer vacation abroad are cordially urged to combine with their plans for travel and sightseeing, a visit to their professional brethren in Europe, and to join in the various exercises of the occasion. Members of the profession everywhere will be welcome. Programmes may be had on application to the President, Dr. L. C. Bryan, of Basel, or to the undersigned,

CHAS W. JENKINS, Secretary,
No. 1 Sonnenquai, Zurich.

Though the ancients were not far behind us in the art of dentistry, for several thousand years preceding modern times the entire science and art consisted in pulling teeth. In the memory of living men, the public tooth-puller was a frequent offender at village street corners and is probably still plying his lucrative trade in some parts of the United States. It is but lately that the dentists best known to Parisians were called "arracheurs des dents," or tooth-drawers, who had chairs on the Champs Elysées, where they extracted teeth in the presence of large crowds. The arrival of the American dentists, forty years ago, gradually banished these worthies from the public view, and gave dentistry the rank of a profession. But dentistry is still, in France, a great refuge of quacks and impostors, as there is no proper legal control of the art, and no diploma is required for the practice of it.—*Lit. Digest.*

WISDOM TOOTH OF A MAMMOTH.

A fossil curiosity in the shape of a mammoth's tooth was found a few days ago in West Seattle by Joseph S. Richards. The tooth was found at the foot of the bluff, not far from the beach, and was covered with clay at the time, indicating that it had been unearthed by the breaking away of the hill. The crown of the tooth, which was of an oval shape, measured 7½ inches in its largest diameter, 3½ inches in its smallest diameter, and 18 inches in circumference. The posterior edge of the tooth was 4 inches in length, the anterior edge 6 inches, the largest circumference 22 inches, and the weight 9½ pounds. It is supposed to be the lower back tooth from the left side of the jaw. The ridges have turned to chalcedony, and extend entirely through the tooth, while the material between has the appearance of iron—*Seattle Post-Intelligencer*.

THE MISSISSIPPI STATE DENTAL ASSOCIATION.

At the twentieth annual meeting of the Mississippi State Dental Association, held in Natchez, May 1, 2, 3, 1894, the charter obtained for that body, by a committee appointed at the last annual meeting, having been granted in the name of the "Mississippi Dental Association"—(the word State having been inadvertently omitted) it became necessary to dissolve the old association, and to reorganize under the new name. This was accordingly done, the charter being accepted, a revised consititution and by-laws adopted, and the following officers elected;

Dr. W. E. Walker, Pass Christian, President; Dr. F. H. Smith, Water Valley, Vice President; Dr. T. C. West, Natchez, Secretary; Dr. C. C. Crowder, Kosciusko, Treasurer. The Association adjourned to meet in Jackson, on the Wednesday after the first Tuesday in April, 1895.

WEEPING AND WAILING IN THE SANCTUM.

It would be really quite appalling—if it were not sometimes so amusing—to contemplate the utter depth of woe into which an unfortunate editor may be plunged by the misplacement of an otherwise innocent little piece of type metal. In our May issue in reviewing Dr. Ottolengui's book, that perennial bird of prey, the typo, made us say "sail" when we had written it "sale." We have all along been conscious of the likelihood of mistakes happening in the best regulated journalistic families, but *such* a mistake ! ! That miserable little word has driven us despairingly into our den—into the nethermost, furthermost, darkest, dreariest corner of it. We have never seen the sun shine since. We have felt like a lone, lost dog skulking along the remotest alleyways of life, expecting everybody to shy a stick at us. And we have no excuse to offer even now, unless perchance it might be considered some excuse that the force of circumstances drove us to read the proof of the May number at such unseasonable hours that all good Christian folks were asleep and dreaming long before. We wonder now, as we look at that little nightmare of a word, if we too were not dreaming part of the time.

OBITUARY.

RESOLUTIONS ON THE DEATH OF DR. RAWLS.

At a called meeting of the dentists of this city, this the twenty-third day of April, the following members were present: Drs. L. F. Huffman, T. D. Kelley, S. S. Johnson, C. G. Burgin, F. B. Bosworth, R. Y. Henley, S. A. Donaldson, H. L. Harlan, Lexington, and W. W. Justice, Winchester.

Dr. Kelley was appointed Chairman and Dr. Harlan Secretary.

On motion, Drs. Huffman, Johnson, Henley, Donaldson, and Harlan were appointed a committee to draft the resolutions which were as follows:

WHEREAS death has taken from our midst in the full prime of life and usefulness, a talented and exemplary member of our profession, Dr. Albert O. Rawls, whose career was crowded with vicissitudes, but whether as a soldier, battling for his country's existence, a student preparing for the battle of life, a professor teaching others to be self-sustaining, or practitioner in his honorable calling, he was always a man of honor and probity, carrying himself so as to earn the respect of his comrades in arms, and his brethern in the dental profession, and the esteem and good will of all who had the pleasure of his acquaintance. He was a charter member of the Kentucky Dental Association, of which he was twice elected President, and was a member of the State Board of Dental Examiners. For years he was President of the Mississippi-Valley Dental Association, and in the American Dental Association he was honored with office.

In the presence of so sad a death, it is meet that members of the dental profession in this City of Lexington take some formal action, evidencing their unaffected sorrow at the loss which they have sustained.

Resolved by the dental surgeons present, that we deeply deplore the death of Dr. A. O. Rawls, regarding it as a personal, as well as professional, loss to us, as well as to his large clientage, and incidentally to the community.

He was a valued citizen and as a friend was faithful and true, a devoted husband and indulgent father. He worked faithfully in his chosen field and his efforts were crowned with success. To the younger members of his profession his course will serve as a stimulant to them to strive to reach the highest standard of excellence. He understood the demands upon him as practitioner and citizen, and responded fully to their requirements in every respect.

Resolved that we tender to the bereaved family of the deceased our heartfelt sympathy in their present grief, and that a copy of these resolutions be presented to them, and also published in the city papers and dental journals.

H. L. HARLAN, Sec'y.
Lexington, Ky.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

DISEASES OF THE PERIDENTAL MEMBRANE AND THE URIC ACID DIATHESIS.

BY G V. BLACK, M. D., D. D. S., SC. D., JACKSONVILLE, ILL.

In the January number of the *International Dental Journal* of the current year, there appeared a remarkable paper from the pen of Prof. C. N. Pierce, of Philadelphia, setting forth views of the pathology of a form of disease of the peridental membrane that seems to have attracted wide attention. This is partly from the general interest the profession is slowly developing in these diseases, partly for the reason that when Prof. Pierce speaks we all listen, and partly for the reason that some special care seems to have been taken to obtain reviews of the paper by able men. These reviews appear in the March number of the same journal, some of the writers confirming the views of Prof. Pierce, and some combating them. I must thank Prof. Pierce, and others, who have written, for their kindly reference to what I have done on this subject.

The view set forth by Prof. Pierce of the condition which I have denominated phagedenic pericementitis in my articles in the *American System of Dentistry* amounts to a description of a new form of disease not before known to the dental profession ; a disease having its beginning, not at the gingival margin, as in phagedenic pericementitis and the calcic inflammations, but upon the sides of the root of the tooth ; preferably near the apex. It is described as extending from this point, separating the membrane from the root of the tooth and forming pus pockets that open into the gingival space.

In tracing the pathology of this disease Prof. Pierce connects it distinctly with the gouty diathesis as the underlying cause, and cites the presence of *uric acid* in concretions found on the roots of teeth lost by the disease, as determined by analysis, as proof of this connection. His language leads us to the conclusion that he regards it as the "*true pyorrhœa alveolaris*" so long regarded by the profession as a disease having its beginning at the gingival margin of the peridental membrane.

This term, "pyorrhœa alveolaris" was introduced to the profession in a paper by the late Dr. Rehwinkle before the American Dental Association at its meeting in Chicago in 1877, and by him was made to cover those inflammations of the peridental membrane beginning at the gingival margin.. At that time no writer had made any of the divisions now recognized in the pathology of this group of diseases. The term "pyorrhœa alveolaris" is, therefore, a general term covering the group, and expressing a prominent condition belonging to the group in common, *i. e.*, the flow of pus from the alveolus. This term has been retained in this sense by the mass of the profession, though many writers have made the effort to confine it to the graver forms of these affections. But as more effort was made at the treatment of these diseases, many came to recognize that different cases presented such different characters as to require different forms of expression to designate them ; and in my articles in the *American System of Dentistry*, they were divided into three forms ; two forms of calcic inflammation, according as the condition was caused by salivary calculus, or by serumal calculus ; and one form not dependent on calculus, though usually accompanied by it, phagedenic pericementitis.

In this last, destruction of the peridental membrane was the central idea expressed, and the pathology was acknowledged to be involved in much obscurity. It seems to me that a careful reading of the literature that has been developed since, will show that the burden of the discussion has been with reference to the pathology and treatment of this latter form of disease. A variety of terms have been applied. None has seemed satisfactory. Perhaps pyorrhœa alveolaris has been most used, though largely with a limiting adjective ; such as "true pyorrhœa," etc., to designate that the graver form of the disease was meant. However, the term phagedenic pericementitis, is used by writers sufficiently to secure it a place, and as it has not been applied to any other form of disease is certainly preferable, though not altogether satisfactory. I shall, therefore, continue to use the same terms used in the *American System of Dentistry*, and in the same sense.

A criticism I would make of Prof. Pierce's paper, is his continued use of the term "pyorrhœa alveolaris," both in his caption, and many places in his text, as the name of a new form of disease not beginning at the gingival margin, but near the apex of the root of the tooth. No matter if the profession has been mistaken all these years as to the point of beginning of phagedenic pericementitis, so long as an inflammatory disease, beginning at the gingival margin, as the calcic inflammations, is acknowledged to exist, the application of the term used to designate them to another form of disease so different in character is in violation of good usage in nomenclature. Certainly a new name should have been proposed.

Partially, Prof. Pierce has done this; but certainly has been unfortunate; for his "hæmatogenic calcic pericementitis" cannot be said to be any thing more than a change of the form of *serumal-calcic*, or of Dr. Ingersoll's *sanguinary* calculus, the former of which has been much used for a number of years to designate a certain form of calculus deposited under the free margin of the gum; while Prof. Pierce wishes to designate, if I have understood his language, a certain form of calculus which he has discovered to be deposited, either within the tissues of the peridental membrane near the apex of the root, or upon the root itself before or contemporaneous with, the development of an inflammatory focus. Certainly any one conversant with medical terms, and with dental literature would arrive at the conclusion that serumal calculus was meant unless a strong description of the differences was presented. While I regard this matter of nomenclature as of great importance in any writing on dental subjects, this criticism is only incidental to this paper, not its object.

WHAT IS THE SIGNIFICANCE OF THE APPEARANCE OF URIC ACID IN THE CONCRETIONS OCCURRING IN THE MOUTH?

Prof. Pierce seems to have based his opinion that a certain form of pericementitis is due to the gouty diathesis largely on the fact that the concretions found on the roots of teeth lost by the disease contained uric acid as shown by analysis. The idea that this disease may be a local manifestation of the gouty diathesis is by no means new, it having cropped out in the literature time and again within the last ten years. But Prof. Pierce has made a new point that has startled the profession, as is evident from the reviews of his paper. After reading the article, and reflecting on the matter contained, I made some review of the steps usually followed in the analysis of salivary concretions, to see whether or not they could be regarded as conclusive as to the detection of uric acid. I found that the plans were such that it would be placed simply with "organic matter" without detection. It did not seem probable, however, that it would have escaped detection all these years. I hoped that some one would take this up and make the determinations; but after waiting until May I determined to satisfy myself on this point. Though I have done considerable chemical work in the past, for a number of years other matters so claimed my attention that this field has been neglected, so that I did not feel fresh in this particular work. But I improvised a sufficient apparatus for the murexid test and went to work. As I regard this as an important matter I shall give the plans of this work in detail, so that if I have fallen into error it may easily be detected by those skilled in this kind of investigation, and corrected.

My improvised apparatus is very simple. An ordinary coal oil lamp was arranged with a wire support in its chimney upon which was placed a sheet metal dish five inches in diameter, and one inch deep. This dish was filled with pulverized pumice stone, and upon this was placed glass capsules (watch crystals) in which the examinations were made. A little experience with this apparatus enables one to maintain an even gentle heat for the purpose of dissolving and drying the calculus. Having obtained some sodium urate, as the first step, I mixed this with various substances, and in varying quantities, from an infinitesimal amount up. Some of these were mixed together rather imperfectly and some were ground thoroughly together; while still others were similarly prepared but without the sodium urate. These I tested by dissolving in an excess of nitrate acid, C. P., upon the pumice stone bath, and drying. When the capsule was removed and cooled, ammonia was applied and the development of color watched; and the variations of shade in the different mixtures noted. This preliminary work was done to familiarize myself afresh with the murexid test, and to be sure that I should not mistake the indications of small quantities of uric acid. In these tests I seemed to obtain the usual reaction as detailed in the books, that is, varying quantities of uric acid gave varying shades of red, provided the quantity was very small and the mixture thoroughly ground together; if the quantity was more considerable a solid color. Or, if imperfectly mixed the color would appear in spots or streaks, while if in very small amount the color would only appear here and there.

In testing concretions from the mouth I found it necessary to add the acid in what appeared at first to be a considerable excess in order that considerable lumps would be completely dissolved, or else grind up the calculus. The former plan was used; for I found after some preliminary trial, that the appearance of uric acid in masses of calculus was generally irregular; that is, disposed in spots and bunches rather than distributed regularly through the masses; and if dissolved without grinding or stirring during the process of solution this irregularity would appear in spots and streaks, whereas, in the ground specimen, only a general flush of red would appear. The calculus, when dissolved and dried on the glass, gives a bright pale yellow disc uniformly, the original color of the calculus varying the shade but slightly; and upon this yellow disc, if uric acid is present, the red color appears on the addition of ammonia. In all of the tests detailed in the following pages the result was written while watching the reaction of the individual specimen, and I have retained the language used at the moment in expressing the result. These results are given in full on pages 466 to 472, inclusive. Taken with what I have now said of the manner of making the tests, I probably cannot express it better. I will remark, however, that with a few notable exceptions the indications were of very slight amounts of uric acid.

The general appearance of uric acid in the calculi of the mouth as shown by these tests, and the close correspondence with the results published by Prof. Pierce startled me. While I had expected, from reasoning on the subject, that slight amounts of uric acid would often be found in such oral calculi as are deposited under conditions of irritation and drooling of serum, I was not prepared for its general appearance in salivary calculus. Until a few years ago physiologists and pathologists regarded the appearance of a certain amount of uric acid excreted with the urine as normal, and its formation in tissue metabolism as physiological. Dalton gives this as uric acid one to urea forty-five, always in the form of urate of soda. Most physiologists have supposed that the formation of uric acid was closely connected with the formation of urea; but later some observers have arrived at the opinion that the formation of uric acid has nothing in common with the formation of urea in man, though it takes the place of urea in birds and reptiles, and is not abnormal in man. Still another group of observers now claim that the formation of uric acid in man is always abnormal and pathological.* Still the observations of all go to show its very frequent if not continuous presence in most persons regarded as fairly healthy. So long as this is the case the discussion of these disputed points seems unnecessary to the purposes of this paper. The facts being that uric acid is generally present in the blood, it is not surprising that it appears in slight amounts in the secretions derived from the blood. Some of my tests seemed to confirm the notion that uric acid was at least in greater abundance in serumal calculus than in the salivary; as number four, in which the salivary calculus was free from uric acid while the serumal seemed to be made up mostly of the urates. While I have in no case found the expression of uric acid so strongly marked in yellow salivary calculus as in some of the specimens of the serumal, traces occur generally in both, its absence being the exception. It will be noted that while these examples have been taken from all classes of people nearly, as regards the condition of health, I have not happened upon any who were actually afflicted with genuine gout, though a number are from markedly arthritic families. In these the uric acid has always been present, though certainly not in larger quantities than in many who have no gouty kinsfolk.

With this exhibition of the appearance of uric acid in the concretions occurring in the human mouth, the significance of the appearances reported by Prof. Pierce is reduced to zero. It is simply a mistake based on the supposition, which seemed reasonable at the time, that ordinarily oral concretions did not contain uric acid. My cases do not show a greater prevalence of uric acid in patients with phagedenic pericementitis than in those without that disease, nor does the amount contained in the calculus seem to be greater so far as that can be judged by the murexid test.

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*The reader may trace these opinions expressed in brief form in the volumes of Sajous' Annual of the Universal Medical Sciences from 1888 to the present time.

In the Mississippi valley the presence of true gout is comparatively rare. Our people are a restless energetic folk who have not time to spare from the chase after the almightly dollar to have gout in the good old English form. Enough cases come to visit us, however, for us to become fairly familiar with its forms of expression. If our people have gout frequently it must be in some of the forms of so-called American gout, which seems to be the latest fad with a number of American writers. As to the broad claims that are being made by recent writers as to the variety of affections induced by uric acid it will be well for the dentist, and the physician as well, to keep the main features of the better known expressions of the uric acid dyscrasia well in view. First and most prominent are the local expressions, the symptomatology and course of which are well made out. Any local disturbance chargable to the uric acid dyscrasia should, in the main, present a similar chain of symptoms modified by the character and physiological relations of the injured tissue. For instance, a local deposit in the cartilages of the vocal apparatus might induce an aphonia which could easily be mistaken for tubercle or paralysis if general conditions were not carefully considered, notwithstanding the wide difference in these forms of affliction. The second, and usually the less prominent features of this dyscrasia is found in perversions of the nervous system, and are not as yet so accurately outlined as the local manifestations. It is in this field that the most difficult problems connected with this dyscrasia will be found. It is to this field that so-called American gout belongs; dealing for the most part with such conditions as irritability, headaches, vertigo, migraine, the neuralgias, insomia, and the various forms of, and effects resulting from so-called nervous exhaustion. Doubtless, many pathological states which in their causation are in no wise dependent upon the uric acid dyscrasia are aggravated by its presence. I take it that much of the present confusion is the result of the renewed study of the pathological states resulting from excessive production of, or retention of uric acid in the system; the conditions and symptoms of the nervous disorders resulting not yet being certainly ascertained. In due time these theories will crystallize into well-ordered knowledge of cause and effect. For the present it will be well not to allow the suggestion of the almost universal prevalence of evil influences from uric acid to take possession of our fancies.

However, the fact that uric acid appears generally in the oral concretions does not prove that phagedenic pericementitis is not a local expression of gout. After having given the matter close consideration in connection with the development of the facts narrated I am of the opinion that the appearance or nonappearance of uric acid in calculus on the roots of teeth or elsewhere in the mouth is of no value whatever in the diagnosis of the uric acid dyscrasia.

DO PATIENTS WITH PHAGEDENIC PERICEMENTITIS SHOW EVIDENCES OF GOUT?

. It has been pointed out by others that patients coming to us with phagedenic pericementitis are neither gouty subjects nor of gouty families, in much the larger proportion of cases. This is certainly the case with much the larger proportion of cases that have come to me. I have a few such patients who are gouty, or of the arthritic diathesis, but they are far in the minority. Neither do I see that these patients are especially more difficult as to the management of their phagedenic troubles than those not presenting the arthritic diathesis. The question has been raised as to the ability of the dentist to diagnose the uric acid dyscrasia, gouty tendency, or arthritic diathesis. This question cannot be profitably discussed. I will only say that while in many instances this may be true there are certainly a sufficient number who keep up in medical literature and are fully competent to stand beside practitioners of general medicine in the discussion of such a subject.

GOUT MANIFESTS CERTAIN PATHOLOGICAL CHARACTERS.

True gout is a paroxysmal disorder manifesting itself locally in sharp exacerbations of pain, inflammation and swelling of affected parts; and upon the general system in fever, and peculiar disturbances of nervous function which has made the irritability of gouty persons a byword. Though the pain in an affected part may be severe, the inflammatory movement sharp, and the swelling very great, suppuration does not occur. On this point the reader may be referred to any general work on medicine or pathology treating of this subject published within the last thirty years. This fact has been generally remarked by writers, and Dr. Draper* goes so far as to say "a termination in suppuration would exclude the idea of the gouty nature of an arthritis." On gouty hands swollen out of shape by gouty deposits and repeated severe inflammations, I have seen culculi coming through the skin by an absorption of tissue in which suppuration had no part; and some one has remarked that such patients could write their name upon a blackboard with the chalk extruding from their knuckles without smearing it with any secretion. Gout is, therefore, an eminently nonsuppurative disease. On the other hand the diseases of the peridental membrane, and especially phagedenic pericementitis is an eminently suppurative disease. In this respect the two affections are as different as the East from the West. If concretions of uric acid, or its salts, form within the tissues of the peridental membrane they should be expected to produce conditions similar to those produced by like concretions in other parts of the body. Dentists have no knowledge of such an affection.

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* Pepper, Vol. I, page 126.

SUPPURATION.

Suppuration, though resting upon the inflammatory state as its basis, may be regarded as a pathological condition in itself; and an epiphenomenon* of injuries, and various pathological states of which inflammation forms a part. Yet it occurs so continuously in certain inflammatory disorders that we are apt to think that there is something in the cause, manner, or results of the departure from the normal that especially prepares the way for the suppurative act; and that this constitutes an important element in the pathology. The term pyorrhœa alveolaris would not have occurred in our literature except to exhibit a prominent characteristic of the diseases of the peridental membrane beginning at the gingival margin. On the other hand other certain inflammatory disorders, and especially the group resulting from the uric acid dyscrasia, of which gout and rheumatism are the principal members, are habitually free from suppuration. When a pathological state manifests itself in other than its usual and best known localities it carries with it certain of its usual phenomena, modified often by the circumstances of its environment. Lupus was long thought to be a distinct pathological state, but finally the closer study of its morbid anatomy, and the steps in the progress of the induration, and from induration to suppuration connected it with tuberculosis. The finding of the tubercle baccillus in lupus of course fixed its identity as a tuberculosis of the skin. If phagedenic pericementitis is a local manifestation of the gouty diathesis it should present the main features of the symptomatology and successive steps of other local manifestations of the gouty diathesis.

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*Though not given by Webster the word "epiphenomenon" crops out occasionally in medical writings, representing a condition implanted upon some other as its basis.

PAROXYSMS.

Gout is paroxysmal. Phagedenic pericementitis is well known to be a disease of insidious approach and of fairly even course, often doing grave injury before it is noticed by the patient ; separating it sharply from the paroxysmal in pathology. I have seen but few cases of the disease that have shown a paroxysmal form, and those that have, have shown paroxysms so different in their nature as to serve to distinguish the two diseases sharply. I have had a few cases that I have denominated phlegmonous, in which the membrane of a certain tooth, not the same one at each occurrence, would become sore, rapidly exhibit swelling of the gingivæ and quickly develop an abscess occupying the gingival third, more or less of one side of the alveolus. (Lateral abscess.) This upon evacuation of the pus with a bistoury usually ends quickly in a more or less complete recovery. Such paroxysms are purely incidents of pus formation. We cannot conclude that this kind of paroxysm is the expression of the paroxysms of the nonsuppurative gout even though the patient be of a gouty family. These abscesses will be further discussed later.

AGENCY OF MICROÖRGANISMS.

The agency of microörganisms in this disease has been mentioned by Prof. Pierce. I am still of the opinion on this point that I expressed somewhat guardedly in the *American System of Dentistry*[1] and must say that time, study of the various forms of expression of the disease, and the results of treatment have tended to confirm this hypothesis. Still the matter of causation remains in the condition of the Scotch verdict, "not proven." But as to the pyogenic microbes, especially the staphylococci, to which Prof. Pierce alludes as being nonpathogenic, we may find them in connection with this disease, or our cultures may fail to discover them. This class of microbes is classed as pathogenic by Flügge[2], Fraenkel[3], David[4] and most other bacteriologists. I have never supposed that this particular organism stood in a causative relation to this disease, though it may, and doubtless often does act as a factor in the pus formation. Miller[5] has shown that microörganisms of pathogenic powers are, at least often, present in the human mouth that have resisted all effort at artificial cultivation ; the life history and pathogenic powers of which are but little known. It seems to me probable that this disease is the result of the growth of a strictly parasitic fungus which we are unable to study by our present means of research.

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[1] Vol. 1., page 977.

The pathogenic power of the pyogenic staphylococci is something very different from that exhibited by such microörganisms as the bacillus anthracis, or the bacillus tuberculosis. These latter invade healthy tissues, and the bacillus anthracis particularly will invade the tissues of the strongest animals and produce its results. On the other hand the staphylococci seem incapable of invading healthy tissues, but are confined to the production of changes in inflammatory exudates. But when once established in an inflammatory focus they are capable of greatly extending the area of the inflammatory movement by the irritation they incite. In this field the staphylococci and those other pyogenic fungi that stand closely related to them in pathogenic power are the terror of the surgeon in the management of accident and operative wounds, and perform their full share of mischief in other inflammatory conditions. So long as the state of suppuration is regarded as pathological these microbes must be regarded as pathogenic.

BEGINNING NEAR THE APEX OF THE ROOT.

I will now notice more particularly Prof. Pierce's description of the new form of pericementitis. The one point that merits especial attention is his claim that this disease begins at or near the apex of the root. In a broad sense perhaps I have no right to discuss this proposition; for really I have never recognized this form of disease, though I have certainly had a fairly broad experience with diseases of the peridental membrane. It would be more than foolish for me to say that such a disease does not exist because I have failed to recognize it. Still I may compare it with cases that have come under my observation and note the differences. For this purpose I may take one of the worst cases coming under my care—one in which treatment has been practically unavailing. This person (No. 17 in the reports of cases), is of gouty family on the mother's side. The finger joints of the female members of the family enlarge, usually, at thirty-five to forty. This one has developed asthma, the paroxysms occurring only in midsummer, and which she has learned to avoid by "summering" further North. The patient has been under my care since her girlhood. She had very good teeth, though some filling was required. Her mouth was habitually clean, free from concretions, and gums firm and healthy. About ten years ago I first noticed a suspicious redness of the gingivæ spreading in streaks upon the buccal gum over the root of one of the upper bicuspids. I found no sign of concretions under the free margin, but I did find some detachment of the membrane. The case excited my attention particularly; occurring as it did in a mouth so perfectly clean. A few local treatments seemed to arrest it, but in a short time it recurred and more treatment was instituted. The patient was often away from home for months together, and on her return from one of these trips I found a well-marked case of phagedenic pericementitis, with drooling of pus and some serumal calculus. After a time the patient came to me in severe trouble. She had lost a night's sleep with a painful tooth which had been sore for a few days before. I found the gums much inflamed and swollen on the lingual side of the root. A puncture evacuated a quantity of pus which occupied the gingival half of that side of the alveolus, which part was much enlarged by the absorption of the alveolar wall. Now this thing has occurred over and over again with this patient, the attacks often destroying some portion of the membrane or alveolar wall of the tooth attacked. This has been the direct cause of the loss of a number of teeth.

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[2] Die Microörganismen, seite 145.

[3] Bacterienkunde, seite 119.

[4] Les Microbes de la Bouche, p. 126.

[5] *Dental Cosmos*, October, 1891.

This case might easily be interpreted as one in which the foci of inflammation began within the tissues of the peridental membrane apart from the gingival margin; though as unlike a gouty manifestation as anything pathological can well be. The case reminds me of the argument of a friend of mine, an M. D., and confirmed doubting Thomas as to the pathogenic power of microorganisms. He was a man of very poor nutrition, as was this female patient of mine. He developed a large and troublesome abscess which burrowed widely among the abdominal muscles, which he claimed microörganisms could not have reached; though he said the sore was distinctly started by breaking, and irritating the skin by a button.

An interpretation of these lateral abscesses as the beginnings of foci of inflammation within the substance of the peridental membrane apart from, and unconnected with, disease of the gingival borders, I should regard as misleading—as much so as to separate the formation of the abscess in the walls of the abdomen from the injury to the skin. The fact seems to be that the break in the tissue and the gathering of inflammatory products at the gingival border has given access to pyogenic microörganisms to a tissue not well able to resist, and an abscess has formed which is in every way akin to abscesses occurring in other parts of the body. But in this case they so often permanently destroyed the attachment of the peridental membrane that grave injury was done. Still the greater number healed with fairly complete restoration of the parts. I have had a few other cases presenting similar characters, but none in which this kind of incident of the progress of phagedenic pericementitis was so prominent or so persistent. I have also seen many such abscesses result from the irritation of calculus—calcic abscesses of the gingivæ—some of which have extended deeply into the alveolus. They are not, therefore, confined to phagedenic pericementitis. I regard them as an epiphenomenon of the disease.

TISSUES OF THE PERIDENTAL MEMBRANE.

Before taking up the treatment of this disease I wish to say a word in regard to the nature of the tissues of the peridental membrane in their relation to this affection. It has been said in the discussion in the *International Dental Journal* that this membrane is composed of connective tissue. It has indeed strong white fibers which serve to hold the tooth in position in its alveolus, but these are not condensed into the form of a ligament, or ligaments; but are everywhere separated by a free intermixture of cellular elements and a very bountiful supply of blood vessels and nerves. Considered as a joint the attachment of a tooth has little in common with other joints. It has none of the cartilages which are the favorite seat of gouty deposits. Furthermore it has a pretty large supply of glandular tissue which can no longer be ignored in the consideration of its pathology. These glands had not been discovered when I wrote for the *American System of Dentistry*, though indications of their presence had been noted and were discussed in my articles.* The glands themselves are described and illustrated in my work on "The Periosteum and Peridental Membrane,"† though the exact connection with the gingival space was not made out, and an important relation of the glands missed. Since that time evidence of the connection of these glands with the gingival space has accumulated until it can no longer be a matter of doubt, though it cannot be satisfactorily illustrated. They have now been recognized as true epithelial tubular glands by several investigators.‡ Therefore instead of being akin to the lymphatics they must be regarded as of epithelial origin, pouring their secretion into the gingival space about the necks of the teeth. They seem to be the true seat of disease in phagedenic pericementis. The formation of pockets extending deeply into the substance of the membrane is but the expression of the suppuration of these glands, the course of which is followed. They are the glands that are acted upon by mercury in the initial steps of salivation, "when the gums are just touched," as our fathers used to say. They also furnish the cells loaded with iodine after the exhibition of potassium iodide, which can be obtained from the gingival space and the iodine demonstrated.

These are indications that phagedenic pericementitis may be an expression of a constitutional disorder. Either mercury or iodine in sufficient quantity circulating in the blood has an elective affinity for these glands and causes them to inflame. Neither of these, however, produce a diseased state similar to phagedenic pericementitis. Perhaps some other substance will. But what substance? Something formed by faulty tissue metabolism. What something? What is the dyscrasia? The difficulty is that every one thus far suggested produces the wrong kind of pathological phenomena; occurs in the wrong patient persistently; or manifests itself at the wrong age. Finally we are driven back upon the hypothesis of a local affection occurring from local causes, as under all of the circumstances the most plausible; and suggesting a treatment the most effective, though lame enough to make us wish for more light.

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*Page 955-6 Vol. I.

†W. T. Keener, Chicago.

‡Etude du Ligament Alveolo-dentaire chez l'homme et chez certains animaux, par Auguste Collaud, p. 26.

The secretion from these glands is also the source of the serumal calculus deposited around the necks of the teeth within the gingival space. This is augmented greatly by irritations that increase the flow, or by serum exuding as a result of irritation. The irritation by this calculus often gives rise to the formation of pus, producing a condition similar to phagedenic pericementitis, but without its characteristic pockets, a condition that is cured by removing the concretions and keeping them away, if done before too much injury has been effected. This is properly serumal calcic inflammation.

TREATMENT OF PHAGEDENIC PERICEMENTITIS.

The broad claim was made by Prof. Pierce, and by some others in the discussion, that phagedenic pericementitis has been found incurable by local treatment. In the discussion we get some glimpses of the treatment that has been employed by the gentlemen making this claim. It seems to consist of cleaning the teeth and making certain applications once per month. If this is a correct represention of the treatment employed, I do not wonder that the disease is regarded as incurable.

Phagedenic pericementitis may get well spontaneously in rare instances, but the rule is that it is limited only by the loss of all of the teeth, though usually of very slow progress. It is only occasionally that a few teeth will escape, and the disease disappear with the loss of the others. The loss of the teeth always ends the disease. This being the history of the results of the disease when left to run its course we can fairly estimate the results of treatment. I have had a sufficient number of patients with this disease who would come for treatment only occasionally to fairly estimate the results of monthly treatment ; and I wish to say emphatically that I regard such treatment as utterly useless when anything more than a temporary palliation is intended. But if the treatment is wisely pursued at proper intervals, a large majority of the cases can be brought under control, and that by local treatment only. In persons, however, in bad physical condition, general treatment will be of value.

I wish it distinctly understood that I am not now speaking of the calcic inflammations. These, when too much injury has not been done, will get well if the concretions are removed and carefully kept away.

I do not wish to convey the impression that I regard the treatment of phagedenic pericementitis as a simple matter, or that all teeth can be saved, no matter how bad. It is quite the reverse. Often we must gain control of a case by the extraction of some of the worst teeth. I am doing much more of this now than formerly.

When a case is presented, if in the earlier stages, there are three things to be done. First, see to it that the teeth and denuded portions of the roots are clean and kept clean. Second, control the formation of pus. Third, stimulate and strengthen the tone of the cellular elements of the tissues by every possible means. In the last, constitutional treatment has its place. It matters little how these things are done so that they are done effectively. But the local treatment must be applied twice per week so long as there is a trace of pus, and then continued as often as once per week for from one to three months afterward. After this the patient may be seen less frequently. But I make it the rule to impress upon phagedenic patients that they are not to be discharged as cured, no matter how well they may consider themselves. This is for two reasons. First, if a case of phagedenic pericementitis has made considerable progress, if cured, permanent injury has been done to the gingivæ that renders them more liable to disease afterward. Second, the disease is so insidious in its attacks that it may return and do great damage before the patient discovers it. I therefore have patients return with sufficient frequency for me to keep watch over them for several years. It is my opinion after long and careful observation that this rigid course of treatment is actually necessary to the cure of cases that have not made very considerable progress when first seen. Cases will look much better in a week or two and be as bad as ever in the same time of neglect.

What of cases that come to us with the peridental membranes so badly injured that the teeth cannot be used in mastication? I will say that while many such teeth are hopeless, some will yield readily to treatment; the difference depending much on certain local conditions, a proper appreciation of which is of the utmost importance. In this we find a strong support of the local and infectious nature of the disease. Frequently we will find a pocket extending deeply between two teeth, or worse, between the roots of some of the double or tripple rooted teeth where the proper cleaning of the denuded portion of the root is almost impracticable. In such cases a failure of a prompt reattachment of the peridental membrane gives a permanent pocket of a dangerous character. The formation of pus may be checked for the time but generally it is only temporary. It recurs. Under such conditions one will labor in vain: not only with this difficult point, but with the other teeth as well. If the patient is absent for only a week or two, points about the other teeth that were well will be suppurating again. This I regard as reinfection of the parts from the difficult point. *The formation of pus must be eradicated before any part of the mouth is safe.* In this respect pus from the pockets in phagedenic pericementitis has peculiar characters. Pus from alveolar abscess or that caused by the irritation of calculus produces no such results. For a discharge of pus to continue indefinitely from a given tooth without affecting the gingivæ of other teeth is sufficient proof that the case is not one of phagedenic pericementitis.

This being my conviction it has become my habit to extract the particular tooth that seems likely to offend permanently. The advent of bridge work has proven a powerful aid in the treatment of this trouble; for with it the loss may be supplied, the remaining teeth kept in use, and the abnormal abrasion of tissues in the space from which the tooth was removed prevented. Plates resting on the gum about the teeth are inadmissible. This course has enabled me to eradicate the disease in a number of old cases that seemed hopeless while the effort was to retain teeth with permanent pockets in inaccessible positions. I have now a number of these bridges three and four years old without any return of the disease. But this thing cannot be done indiscriminately, and particularly the placing of bridges for phagedenic patients without control of the disease and due watchfulness afterward will certainly bring disaster.

Finally, while there is much in the characters, mode of progress, and general surroundings of this disease that naturally give rise to the supposition that it is contsitutional in its origin or dependent upon some general dyscrasia, a close review of all of the facts known to us give a strong balance in favor of the idea that it is a purely local affection of an infectious character that has relation to a particular tissue; the glands of the peridental membrane. While constitutional treatment has its place in this disease as in other local affections, the dependence must be in local means.

LIST OF FIFTY CASES TESTED FOR URIC ACID IN ORAL CALCULUS.

The manner of making these tests has been given in detail on pages 452 and 453. In all cases in which the uric acid dyscrasia was discoverable it has been reported. My thanks are due to Dr. C. N. Johnson, editor of the *REVIEW*, for valuable aid in the collection of specimens.

HISTORY.	NUMBER.	RESULT.
Female, age twenty-five. Chronic invalid from female troubles. Teeth firm. Margins of gum slightly inflamed in spots from serumal calculus. No pockets. No pus.	No. 1. Serumal calculus.	No color.
Female, age thirty-one. Chronic invalid from nervous affection. Teeth firm. Gums perfect except some spots, reddened from irritation of serumal calculus. No pockets.	No. 2. Serumal calculus.	Color in spots and streaks, not in large amount, but a very decided showing.
Male, aged sixty. Health excellent. No trace of disease of gums. Teeth good. No caries. Alveolar abscess of long standing from tooth with pulp destroyed by a blow, and a large amount of serumal calculus on the end of the root.	No. 3. Serumal calculus.	Two small bright spots of color.
Female, age fourteen. Health good. A single scale of serumal calculus under the gum on buccal surface of a lower molar broken down by caries, the margins of the cavity causing irritation of gum margins. Also a single large scale of yellow salivary calculus on buccal surface of the corresponding upper molar.	No. 4. Serumal calculus. Salivary calculus.	Bright solid color, as brilliant as pure sodium urate. No color whatever.
Female, age thirty-five. Health fair, not robust. Calcic inflammation whenever calculus is allowed to accumulate, but gums heal readily when it is removed.	No 5. Yellow calculus from upper molars.	No color.
	Yellow calculus from lingual surface of lower incisors.	A strong blush of red throughout the mass.
This patient came to me three years ago with severe calcic inflammation, and with a number of teeth shakey. Removal of the calculus and a little aftercare effected a complete cure of all except an upper molar which had no antagonist. Removed this to-day, finding open pulp chamber under an old amalgam filling, and a large blind abscess. All other teeth are now firm, and gums healthy.	A single scale of dark, hard serumal calculus from under gum margins.	Intense color.
	Light colored scale from exposed portion of root of upper molar.	No color.

History.	Number.	Result.
Male, age twenty-five, health good. A little irritation from serumal calculus but gums fairly healthy.	No. 6. Serumal calculus.	No color.
Male, aged twenty, health fair. Only a few scales of serumal calculus. Condition of gums good.	No. 7. Serumal calculus.	No color.
Male, aged forty, health good. Phagedenic pericementitis with deep pockets, and pus, serumal calculus deep in pockets.	No. 8. Serumal calculus.	Very decided color in spots and streaks.
Female, age twenty-two, health good. Persistent phagedenic pericementitis for more than a year. Has been under treatment in another city and has just come to me. History of arthritis in the mother, whose finger joints are much enlarged.	No. 9. Considerable whitish graules of calculus from pockets.	Color very decided in the whole mass.
Female, age forty, health seems good, though she is not a robust person. Only some scales of calculus on lingual surfaces of the lower incisors. Gums healthy and teeth firm. The family is sorely afflicted with insanity, but this one has not been insane.	No. 10. Salivary calculus.	1. Slight general tinge of color. 2. No. color. 3. Color decisive in spots and broad streaks.
Female, age forty, health apparently good; but slight, delicate, nervous person overworked in teaching music. Has had phagedenic pericementitis badly and requires very close watching. One open pocket between roots of molar tooth ought to be removed, but patient has a will of her own). A little yellow salivary calculus on lingual surface of lower incisors. No history of arthritic disease in the family.	No. 11. Salivary calculus.	Color in spots through the mass, distinct but in small amount.

The next five cases were collected by Dr. C. N. Johnson:

Female, age fifty. Salivary calculus from lingual surface of lower incisors. Serumal calculus was present, but I was unable to get any for examination on account of its breaking up into small particles. There were pyorrhœa pockets and three teeth had been lost from this disease. Gums purple. History of rheumatism for years back.	No. 12. Salivary calculus.	Only traces of color occurring in spots and streaks.
Female, age forty. No serumal calculus. No pyorrhœa. Gums healthy. The specimens are from the lingual surfaces of the lower incisors. Has been ill for six months. Not strong yet. Has had to submit to several surgical operations.	No. 13. Salivary calculus.	Color appears in spots, two of which are quite bright. The amount of uric acid is small.

History.	Number.	Result.
Male, age thirty-eight. Specimen from lingual surface of lower molar. Gums healthy except for what seems to be a calcic abscess on lower incisor root. Individual not robust, but no gouty tendency.	No. 14. Salivary calculus.	There seems to be a tinge of color in a single little spot, but it is too slight to count upon as showing the presence of uric acid.
Female, age fifty-two. Pyorrhœa. Has lost some teeth already with it. Pus pockets. Specimens serumal calculus. Always been healthy till recently. Just getting over change of life. Since the change gums are firm, hard and pale except where made purple or blue by pockets. Before this the gums were very flabby spongy, and bled easily.	No. 15. Serumal calculus.	A very slight tinge of color giving the specimen a mottled appearance, but showing quite a reddish cast in a dim light.
Female, age thirty. Specimen salivary calculus from lingual surface of lower incisors. Gums healthy. No pyorrhœa and no indication that there is the least tendency to it. Considerable erosion in the mouth. Patient has been usually strong, but of recent years she suffers from what she calls "nervousness."	No. 16. Salivary calculus.	Several spots of intense red color gradually spreading so as to tinge the entire mass, streaks appear and run through the yellow ground.
Female, age thirty-eight, health fair, but not robust. History of enlarged joints occurring among female relatives, but none in this person. Has asthma in summer in this climate, but not when visiting in northern Maine. Phagedenic pericementitis of the most persistent character. Eight teeth have been lost from this disease, duration of disease about ten years. Calculus has never been abundant.	No. 17. Mixture of salivary and serumal calculus in little bits.	Color is prominent, showing in numerous spots and gradually tinging most of the mass.
Female, age thirty-eight, health fair now, but has been much of an invalid for some years until two years ago. No history of gout or rheumatism in the family. Calcic inflammation of gums, has been very bad, but no phagedenic pericementitis. No pockets.	No. 18. Salivary calculus.	Color prominent throughout the mass.

The next five cases were collected by Dr. C. N. Johnson:

Male, age twenty-four. Specimen salivary calculus from lingual surface of lower incisors. No pyorrhœa. Gum slightly irritated in this region from salivary deposits. Patient in good, general health, but not robust.	No. 19. Salivary calculus.	A prominent diffuse redness throughout the entire mass, but not very bright.
Female, age thirty. Specimen of salivary calculus from lingual surface of lower incisors, and left bicuspid, on account of lack of use of that side in mastication. Patient a most healthy and splendid type of womanhood. Not the slightest tendency to pyorrhœa. Mouth and teeth in perfect condition.	No. 20. Salivary calculus.	Two little spots of bright red, the greater part of the specimen remaining yellow.

HISTORY.	NUMBER.	RESULT.
Female, middle-aged, healthy. No pyorrhœa. Gum healthy, except from irritation of gum margin, where deposit was present. Red line on the gum at these points. Specimen from lingual surface of lower teeth. No deposits on upper teeth.	No. 21. Salivary calculus.	Several minute red spots gradually diffusing in the yellow mass.
Female, aged thirty. Persistent case of pyorrhœa. Teeth have "drifted" out of line badly on account of it. The light specimen is salivary calculus; the small, dark piece serumal. The patient is a school teacher and often overworked to nervousness. There is not the slightest trace of the gouty diathesis, that can be discovered.	No. 22.	Only two minute scales were found in the paper, one dark and the other light, but when dissolved made a nice little yellow disc in the glass capsule. Not the slightest trace of color (see No. 38).
Female, age thirty-five, married. No indication of pyorrhœa, though the specimens were mostly taken from just under the gum margin. Slightly purple color of gum where caculus was lodged, but not a particle of pus, and gum otherwise healthy. No enlargement of gum, nor recession.	No. 23. Salivary calculus.	Slight but decided tinge of red in several spots, which diffuse more and more into the general mass. Color not bright anywhere.
Female, age thirty-five, Portugese. Excellent health, teeth good, no tendency to disease of gums except where two spots of salivary calculus had collected on the labial surfaces of the lower incisors. Gums at these points were bright red. No pockets.	No. 24. Salivary calculus.	No trace of color.
Female, age thirty-five. Music teacher. A picture of health and activity. Gums and teeth in excellent condition without any showing of irritation. Only two small scales of salivary calculus on the lingual surfaces of the lower incisors.	No. 25. Salivary calculus.	A bright flush of color over nearly the whole mass, and several spots of very bright red.

The next five cases were collected by Dr. C. N. Johnson:

Female, about twenty. Specimens taken from nearly all localities in the mouth. Mostly from just under the free margin of the gum. No pyorrhœa. Not the slightest indication of pus, but one of those cases where one would anticipate pyorrhœa if deposits were allowed to remain long enough. Gums slightly puffed over deposits, but will immediately recover since deposits are removed. Health has been poor. Nervous prostration. Not robust yet.	No. 26. Mostly serumal calculus.	A particularly brilliant specimen, color appearing in a multitude of bright spots, and gradually spreading until the whole mass is mottled with red, shading into yellow.
Female, age thirty-four. Has neglected her teeth, but there is no indication of pyorrhœa. Specimens are salivary calculus.	No. 27. Salivary calculus.	A general tinge of color and some spots, becoming quite bright.
Female, age thirty-five. Married. Specimen salivary calculus. No pyorrhœa. No indication that there ever was, or ever will be. Gums perfectly healthy. General health good.	No. 28. Salivary calculus.	Little bright spots of red that fade as they spread into the yellow mass, but leave a decided flush of red.

HISTORY.	NUMBER.	RESULT.
Female, age thirty. Salivary calculus from buccal surface of upper molars. No pyorrhœa. Red condition of gums around upper incisors which subsided after one or two treaments with iodide of zinc. Patient has great responsibility resting upon her and is much of the time is a nervous "run-down" condition.	No. 29. Salivary calculus.	Color appears at many points, and finally tinges the whole mass.
Female, age forty-seven. Calculus from lingual surfaces of lower incisors. Not the slightest tendency to pyorrhœa, though it is one of those cases where, on account of neglect. one would look for it. Patient has been for years a sufferer from rheumatism. Not so much troubled at present.	No. 30. Salivary calculus.	Color appears at many points, and finally tinges the whole mass.
Female, age forty-five. Health good. Phagedenic pericementitis in an early stage. Three pockets have formed about the necks of upper molars, and there is some pus. No calculus about them. Very little calculus in the mouth. Specimen from the lingual surface of the lower incisors.	No. 31. Salivary calculus.	A tinge of color so slight as to admit of uncertainty.
Male, age thirty-eight. Health good. Teeth good except for calcic inflammation about one tooth only; this one so loose that its removal was imperative. Calculus crusted to end of root on one side.	No. 32. Serumal calculus from near apex of root. Salivary calculus from neck of tooth.	A pronounced red flush, but no very bright spots. Only a perceptible tinge in spots and streaks.
Male, age forty. Perfect health. Teeth good. Gums in exceptionally good condition. Just a little salivary calculus on lingual surfaces of lower incisors.	No. 33. Salivary calculus.	A red tinge mottles the yellow ground, and gradually deepens into a general reddish cast.

The next five cases were collected by Dr. C. N. Johnson:

Female, age thirty-two. Health Fair but not robust. Teeth subject to salivary deposit of which the specimen is a sample, but no pus formation. Upper third molars somewhat loose, but no pockets and no pus.	No. 34. Salivary calculus.	A general mottling of red flush without any bright spots.
Female, age twenty-one. General health good. Specimen salivary calculus. Gums perfectly healthy. Not the slightest indication of pyorrhœa.	No. 35. Salivary calculus.	Several small spots of bright red, and a slight flush in other parts of the yellow ground.
Female, age thirty-five. Health has not been good for several years. Has just returned from Germany quite improved. Health now good. Specimen, salivary calculus. No pyorrhœa. Was unable to learn the exact nature of previous ill health.	No. 36. Salivary calculus.	No change of color whatever on adding ammonia.

HISTORY	NUMBER.	RESULTS.
Female, age twenty-two. Health good. Gums in many places purple in interproximate spaces, but no pus on pressure. Case where one would look for gum to become perfectly healthy after removal of deposits.	No. 37. Salivary calculus.	A general mottling of red flush, some spots quite bright.
From same patient as No. 22. Calculus taken some weeks later to see if examination would correspond with previous one, which showed no trace of uric acid. It is a case of most persistent pyorrhœa.	No. 38. Serumal calculus.	A trace, and only a trace, of red at a single small point, the rest of the field remaining yellow.
Male, age forty. Excellent health and fine physical development. Teeth mostly lost by caries. Gums healthy. Teeth, and roots of broken teeth very firm. Just a litte serumal calculus on necks of upper central incisors.	No. 39, Serumal calculus.	A bright flush over most of the yellow ground. Some spots of much brighter color. This shows an unusual amount of uric acid.
Female, age twenty-five, health good. Gums fair, only some irritation from calculus, which is found on lower incisors and upper molars.	No. 40. Salivary calculus.	Blotches of dull red, and a few small bright spots which fade partially as the color spreads through the yellow ground.
Female, age fifteen, health good. No history of uric acid dyscrasia unless persistent hay fever in summer in the father can be so considered. Teeth decay very rapidly. Gums inclined to be puffy and red, though there is very little calculus. Specimen from lingual surface of lower incisors and from buccal surface of one upper molar.	No. 41. Salivary calculus from lower incisors. Salivary calculus from buccal surface of upper molar.	Many bright spots of color. A slight red flush mottles the yellow ground, no bright spots that compare with the above.
Male, age thirty-eight, health excellent, except that he has hay fever every summer if he stays in this climate, does not have it when he goes to northern Michigan before beginning of the attack. Is well at present. Teeth decay badly, but gums are in good condition. Only a little calculus on the lingual surface of the lower teeth, and two very small scales of serumal calculus, one under the labial gingiva of each cuspid. These were so small and crumbled so badly that I failed to save them.	No. 42. Salivary calculus.	Bright color in spots and streaks but no general blush, much of the greater part of the yellow ground showing no change of color.
Male, age sixty-five, health excellent. Severe calcic inflammation with pus. Large accumulations of calculus much neglected, and loosening of a number of teeth, but no phagedenic pericementitis. Patient suffers from occasional rheumatic attacks of a light character, rarely disabled even for a day.	No. 43. Both salivary and serumal calculus, much of it very dark colored.	Tried a number of specimens and all showed traces of uric acid, but in very different degrees, some giving bright colored spots and some a general flush in addition. All in all, uric acid seemed to be in unusually large amount.
Female, age thirty-five, unmarried, health poor. General nervous derangement (hysteria). A very slight person. Teeth badly decayed. Gums very perfect. Concretions so slight that but a very small specimen could be obtained. The father is rheumatic.	No. 44. Salivary calculus.	Some small bright spots and streaks of color, also a general flush over one part occupying about one-fourth of the disc, the rest showing no color whatever.

History.	Number.	Result.
Female, age sixty, health generally good. but subject to severe attacks of inflammatory rheumatism. Has just recovered from one of these. Gums in excellent condition except that the membranes of the lower incisors were partly destroyed by calculus accumulations a number of years ago. Teeth firm now. Very little calculus in recent years.	No. 45. Salivary calculus.	No trace of color (this is a surprise).
Male, age twenty-two, health good. Gums and teeth in good condition. Only a few small scales of serumal calculus on lingual surfaces of the lower molars.	No. 46. Serumal calculus.	Color appears in spots which spread and tinge portions only of the yellow ground.
Female, age nineteen, health good. Gums in excellent condition, only a few scales on lingual surfaces of the lower teeth.	No. 47. Salivary calculus.	A strong mottling of red, but no bright spots.
Female, age sixty, health excellent. Teeth all lost years ago by "getting loose." Calculus from lingual surface of lower rubber plate.	No. 48. Salivary calculus.	A multitude of fine, bright points which run together forming streaks and finally tinge most of the yellow ground.
Male, age thirty. Health good, inclined to obesity. Teeth and gums in excellent condition, except for some collection of yellow salivary calculus on the lingual surface of lower incisors. Reports a severe attack of inflammatory rheumatism occurring in childhood. No other history of the disease in the family.	No. 49. Salivary calculus.	Large amount of calculus was dissolved, making a very broad disc. Only a trace of color tinging three small spots, the rest of the disk retaining its color.
Male, age forty. Generally healthy and rugged, but two years ago, began to have paroxysms of renal colic which continue at intervals to the present. Small gravel stones are passed with the urine. Found a single small scale of calculus on the lingual surface of one of the lower incisors. Teeth and gums in good condition.	No. 50. Salivary calculus.	Developed a few bright spots, and a strong flush of red over the whole disc.
	Renal calculus passed with urine.	A solid red, similar to that from pure sodium urate, but not so bright.
Female, age twenty. Healthy and rugged at present. Has had several severe attacks of inflammatory rheumatism, the last about two years ago. The mother has had attacks of the same disease. Only a scale of salivary calculus on the buccal surface of a partly broken down upper molar. Gums in good condition except for some irritation about some partly broken down teeth.	No. 51. Salivary calculus.	No color.

POINTS OF COMMON INTEREST BOTH TO DENTAL AND NASO-LARYNGEAL SURGEON.*

BY J. H. MARTINDALE, M. D., D. D. S., MINNEAPOLIS, MINN.

Mr. President and Gentlemen :

I think in commencing I am justified in the assumption that you will not desire from my pen some treatise of a very technical or obtruse character, nor one which from its nature would attract attention only from those engaged exclusively in surgery of the throat and nose, but rather that you would be pleased to have me touch in a cursory and practical manner upon the points which my present professional duties suggest as being those in which the dental surgeon and physician should feel a common interest—points, in fact, where the aid of the one is often desired to supplement the knowledge and usefulness of the other.

Having been myself engaged in the practice of dental surgery for thirteen years, during which time I was always moved by the spur of both duty and inclination to fathom all its mysteries and familiarize myself as well with its more homely details, and having also for the last two years devoted myself exclusively to the study and practice of a kindred art—that of treating diseases of the nose and throat—I think I may safely lay claim to the possession of a knowledge of those points which would enable me understandingly to accentuate the many points of connection between the two specialties.

Should the instrument which is oftenest in the hands of both laryngologist and dentist be selected as emblematic of their respective occupations, it would be an instrument called in one instance the laryngoscopic mirror, and in the other, the mouth mirror. The same may with equal truth be said of the simpler forms of the nasal speculum, which is but a modification of the dental pliers.

Dentistry also seems to be a most natural preparation for the duties of a throat and nose specialist, and many of the most notable men in the latter calling have commenced as dentists, as witness the names of Harrison Allen, of Philadelphia; D. H. Goodwillee, of New York City, and Prof. Garretson, of Philadelphia. The nasal surgeons of all cities too, if they are advanced and progressive ones, will tell you that they have obtained many valuable points from dentists, especially those pertaining to the surgical treatment of suppurative diseases of the maxillary sinus.

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*Read before the Odontological Society of Chicago, May, 1894.

In my investigations among the principal hospitals and best known men of my present specialty, both in this country and abroad, I found frequent and candid recognition of the fact that an extended experience in the theory and practice of dentistry constituted quite a valid claim upon their attention, particularly considered in connection with the delicacy of hand required in operations.

At one time in the clinic of Politzer, in Vienna, I was engaged in handling for him the mallet while he was chiseling his way through bone into the mastoid cells of the temporal bone. "Ah," said he, "you know how to mallet. How did you learn?" I told him that it was probably the result of my experience for many years in the use of the hand mallet in dentistry. Again, when about to attempt the same operation, he looked around the group of physicians and said: "Where is our American colleague who uses the mallet a la dentist? I want him to mallet for me."

I find that there is a large class of ailments that should receive the attention of men engaged in the same specialty as my own, which are likely to be first observed by the dentist. I will ask to be permitted later to enumerate a few of them to you. A habit upon the part of a dentist of considering every problem presented to him at the chair in its broadest light and with a view of promoting the true interest of the patient will develop the faculty of intelligent diagnosis. I would urge upon every ambitious dentist to procure for himself a tongue depressor, a nasal speculum and a laryngoscopic examining mirror. I do not expect that you will wish to *treat* any of the diseases of the pharynx, larynx or nares, but I do think that you will find it interesting from a scientific and personal standpoint—to make, and to know how to make such simple examinations of cases which have already excited your suspicion that you may confirm with proof your suspicions, discover some lesion or defect, and with authority direct your patient to the proper place to remedy their ailments.

It might, upon first thought, to narrow men, seem that this sort of thing is out of the dentist's province, who will reason, "why, forsooth should the dentist take the trouble to examine into the condition of parts, which if they are treated at all will be treated, not by themselves, but by some other fellow, who will get both the money and the glory."?

It is perhaps right that the other fellow will get the money, but *not all* the glory. You will be greatly enhanced in the estimation of your patient for having been the first one to have discovered and made known to them the nature of a disagreeable, and perhaps dangerous malady, their family physician himself having overlooked it, and you will in this manner establish for yourself the reputation of being a competent man, and a man whom they respect, and one to whom they will less and less begrudge the remuneration which the intelligent public is always most willing to give its really broad men in any profession or vocation.

I shall later on have also something to say about the obligations of the practitioners of medicine in general, and especially that branch of it to which I now devote my energies, which should actuate them to have more than a cursory knowledge of the science upon which the practice of dental surgery is based. Now, the limitations of time, paper and your kind indulgence do not permit that I should at one and the same time write a thesis in which the many points of approximation and common ground between the dental surgeon and the nasal surgeon should be set forth in detail.

I shall, therefore, content myself by touching, merely in a desultory and casual vein, the ways in which dentists should help the nasal specialist, and vice versa.

In the faces around me, I recognize men of years of practice, and of study, therefore it will only be necessary that I should intimate to their minds certain practical points uniting their sphere of action to mine, and their experience and analytical reason will do the rest.

Upon looking into the mouth, the source of illumination being either that of a condensing lamp or daylight, we see not only the teeth, the palatal arch, the mucous membraneous investment of the alveolus, the dorsum of the tongue, and the floor of the mouth with which, as dentists, we are all practically concerned. But, also in the background and forming the back wall of the cavity under consideration, the posterior wall of the pharynx, just in front of it the velum pelati, like a worm hanging down from the soft palate. The soft palate itself, drooping down to right and left, like the folds of a lambrequin curtain, and becoming divided as they descend into what looks like two folds of thin mucous membrane, generally called the anterior and posterior pillars of the fauces, but which are really the palato-glossus, and palato-pharyngeus muscles respectively. Now, at the inferior portions of the space between these faucial pillars, as you know, is situated the mass of lymphoid tissue known variously as the amygdalic gland, the faucial tonsil, or more commonly still, the tonsil, and which is variously described and naturally, for they have very different aspects in almost every case inspected, due to the fact that these tissues are very liable to take on diseased action in early life, as the result of exposure, or perhaps from some dyscrasia.

We can, perhaps, best describe the average faucial tonsil as consisting of a small elongated almond shaped mass of lymphoid tissue, which presents in its outer surface from five to ten orifices leading down into blind pouches or pockets. Now this organ forms in many cases a very decided connecting link between the dentist and throat specialist. The most frequent cause of tonsilitis is "taking cold" in the common sense of the term, although there seem to be almost always conditions intimating that there is present in the inception of the disease, or that soon after there develops an infectious phase, and it is usually communicable by direct infection to others; in other words is an acute infectious disease; but to the contrary many cases have come to my notice of acute faucial tonsilitis, which had their commencement in the intense inflammation conseqent upon a late or difficult erupting wisdom tooth, which by reason of close proximity to the faucial tonsil, and having the same mucous membrane which is reflected over each, and into the crypts of the tonsil, is thus conveyed by continuity of tissue to the tonsil.

If you will watch your cases of difficult erupting wisdom teeth, I know you will be surprised to see (especially in those cases, which by inflammatory effusions into the masticatory muscles have produced immobility or fixation of the jaw) how often the tonsil has become, in consequence, a secondary focus of inflammation, frequently of the suppurative type, needing not only your surgical skill but that also of the throat specialist. If, in this class of cases, you doubt it, depress the tongue (if you can open the mouth wide enough) and with a good light examine the tonsil, and see how often you will find it intensely hyperæmic, and usually studded with plastic, white patches of exudate which plug up the tonsilar crypts. Now as the opening of the Eustachian tube by which direct communication with, and aeration of, the middle ear is affected, is only about an inch and a half above the tonsil, inflammations of the latter organ are very often by septic infection or continuity of structure extended along the Eustachian tube to the middle ear, hence severe and ofttimes dangerous otitis media produced.

This extension from the mouth to the ear of diseases having their origin in difficult dentition applies also with great force to the period of eruption of the "sixth year molar."

Dr. J. Colles, of New York City, in Burnett's work upon the ear, throat and nose, 1893, has this to say: "The subject of dental irritation in its effect upon the ear in causing and influencing the course of diseases of this delicate organ is one which has excited much interest and considerable investigation among the more progressive aural surgeons of the day.

"On the other hand, it should be stated that many otologists, and most practitioners of our profession have failed to give the subject the attention it deserves, and also to recognize the importance of oral irritation in the therapeutics of ear diseases." Dr. Woakes, of London, as early as 1880, emphasized strongly the importance of an early recognition of the fact that the earache, so common in young children is excited by reflex irritation due to teething, and indicates early removal or correction of the carious teeth, or, under certain conditions, lancing of the gums to relieve peripheral irritation. He says: "It happens, however, very often that the congestion in the deeper seated tissues of the ear goes on to suppuration before the aural symptoms are recognized." How important, therefore, in recognition of that common bane of early childhood, suppurative otitis, so often terminating in meningitis and death, that those in care of their mouth and teeth should be Argus-eyed to recognize the danger.

Sexton, of New York City, states that in a carefully tabulated record of 1,800 cases of ear disease coming under his observation, fully one-third of them originated in, or were prolonged by a diseased condition of the teeth. It is true this evidence was collected in the wards of the free dispensaries of New York City, where proper hygiene and dental care was probably not enjoyed, but even then, this percentage of cases due to dental lesions, or maintained by them, is a startling exhibit of the need of an interdependence between dental and aural surgery.

But to return to our original theme. How many of those cases with which all dentists are familiar, of the patient who cannot endure the rubber dam, who hacks and coughs, who refuses to be comforted no matter how often the considerate dentist desists for a few moments in his work, gives him water to drink, lozenges, gargles, etc., how many, I repeat, of these cases (an examination of which you can easily make) would show a very elongated uvula, or hypertrophy of the follicles of the lingual tonsil, which is situated at the root of the tongue just anterior to the epiglottis, and which your rubber dam and the position your patient is obliged to assume in the chair, provoke to a state of great sensibility.

The length of the normal uvula will possibly average about three-eighths of an inch, and in the majority of cases coming under our observation for operative interference, the length is perhaps from five-eighths to three-fourths of an inch.

When you examine the fauces of a patient of the class above mentioned, and find an elongated uvula, a little questioning will frequently elicit the fact that he finds that the same cough is caused when he lies upon his back that is produced by your putting him in semirecumbent position in the operating chair, and for the same reason, viz.: the pendant end of the elongated uvula is by that position caused to impinge upon the back of the pharynx, a thing not to be tolerated without coughing or retching, which, if you doubt, make experiment by lightly touching with a feather, or a soft catheter, the back of your pharynx. A patient of this description should receive early surgical attention.

Passing on hastily over much that should claim our attention in specific detail, I invite your consideration to the nares as a region most intimately related to the field of operation of the dental surgeon. Again, perhaps you will bear with me if I recall briefly, and succinctly, facts familiar to you which will, however, bear reëmphasizing in connection with this subject: The nasal cavities extend, as you know, from the nostrils in front to the naso-pharynx behind, and are separated from each other to the right and left by the septum nasi. The portion of the nasal cavities, however, of most physiological interest, and also most often the seat of disease, is that known as the turbinated bodies, attached to the outside wall in each nasal cavity, and which run parallel to the long axis of the nasal cavities.

When we consider how manifold and important is the office of these bodies, since they subserve the purpose of olfaction, and the filtration, warming and moistening of the air, which is by them ushered to the lungs, requiring that they should be endowed with such a large and minute distribution of the olfactory nerves, and with such great vascularity of tissue, as is necessary to warm the air going to the lungs, it is no wonder that under the excessive extremes of temperature, so commonly encountered in America, that hyperæmia, vascular dilation, hypertrophy, and other such conditions readily supervene, and that Americans are recognized as the "catarrhal race."

How does all this concern the dentist as a practitioner, do I hear? Greatly, because in many of your patients deformities of the jaw, or irregular dental arch, of idiopathic or traumatic character exist; and of such a character as oblige mouth breathing, partially or wholly. If you do not correct this deformity, you do more than failing to make your patient good looking, you help by your omission to fasten upon them the most pernicious and dangerous habit of mouth breathing, a sure percursor of pharyngitis, laryngitis and asthma, and where the suitable soil for pulmonary tuberculosis exists, a most potent provocative of that. You will also often (if you are observing) be the first to detect, while operating, obstructions of the nasal passages from hypertrophy and vascular dilation of the turbinated bodies, and bony growths upon the septum nasi. Nor, will it be difficult for you by a simple examination of the anterior nares, with a speculum, to in many instances confirm your suspicions, and refer your patient for proper treatment.

Unilateral, purulent discharges from the nose are especially to be noted, as they are proof positive of either foreign bodies, necrotic or carious processes, progressing on the side whence the discharge proceeds, or last and most important to the dental surgeon, suppuration of the frontal, ethnoidal or maxillary sinus, or the fistulous discharge from the dental abscess voiding its contents into the nasal cavity. Should indications point toward suppuration of the antrum, it will be easy to make test by the electric transilluminating lamp, first introduced to our use by Voltalini, and familiar to you all, which, while not of itself alone a certain means of diagnosis, is still a very valuable aid.

While upon this subject of unilateral suppuration of the nose, I want to introduce one of the most convincing cases, evidencing the too common ignorance of physicians on the subject that has come to my attention. In the February number for the present year of one of the principal western medical journals, a physician writes under the title "Foreign bodies in the air passages," the following: "In one place 'These causes' can readily be diagnosed, for we may say that practically nothing but a foreign body in the nose will give a unilateral discharge." And a little further on he says: "Let me repeat, a unilateral discharge of offensive matter from either nostril is pathognomic of the presence of a foreign body in that nostril from which the discharge comes."

How utterly foolish the above statements are must be patent to every dental surgeon of experience, and it should be also to every physician, especially to those who claim to be nasal surgeons; for it is certain that the fistulæ of dental abscesses, and the pus from a suppurative antrum, or the ethnoidal cells is a much more common cause of a unilateral, purulent discharge from the nostrils than is the presence of a foreign body, except, perhaps in the case of young children. I would like very much to give a detailed consideration of the subject of "High palatal arches with relation to deviated nasal septa," and also the treatment of suppurative antrum of Highmore from the combined standpoint of dental and nasal surgeon, but the flight of time and the sight of your patient faces, which, I fear but politely mask the feelings of very tired and worn out men, admonishes me that the hour is late. Should you, however, feel like introducing new argument or questioning after the paper, it would be very pleasing to me.

Let me in closing repeat the hope that you will familarize yourself (at least to some extent) with the use of the nasal speculum, tongue depressor and laryngoscopic examining mirror, which as I have already intimated, are only modifications of your own instruments. I hope also that you will habitually peruse to some extent the literature of the laryngologist and rhinologist.

I always read, and always expect to read to my professional advantage, the Review, *Cosmos* and other dental journals, when I can get them.

In conclusion, let me make use of, and commend to you an extract from one of the leading dental journals of recent date: "Dentistry," says the editorial, "has grown by the development of a field hitherto neglected or overlooked by the practitioner of medicine. The middle ground between Medicine and Dentistry is being closed up by the efforts of, not medical men but dentists, and this same territory which was once occupied by neither, but by courtesy accorded to medicine, is being reclaimed for dentistry."

A closer harmonization of medical and dental practice is necessary alike for physician and dentist, as only by their mutual coöperation can the true interest of the patient be subserved.

SWAGED ALUMINUM PLATES.*

BY GEO. D. SITHERWOOD, M. D., BLOOMINGTON, ILL.

Aluminum is never found in a pure metallic state. Stocker once made the statement that aluminum occurred as shining scales in an alumina formation near St. Austel, in Cornwall County, England, but he was in error; yet there is no other metal which is so widely scattered and occurs in such abundance. Aluminum is found in combination with oxygen, fluorine, silicon, the alkalies and acids, existing in such quantities as not only to form mountain masses, but also the bases of soils and clays.

About 1760 Morveau called the substance obtained by calcining alum—alumina. Afterward when Lavoisier first suggested the existence of metallic bases of the earths and alkalies, and alumina was suspected of being the oxide of a metal, the metal was called "aluminium." This was many years before the metal was isolated. The first practical researches in the preparation of aluminum date back to 1807. Oérsted in 1824 decomposed anhydrous aluminum chloride by potassium amalgam, and obtained along with some potassium chloride, an amalgam which when decomposed by heat furnished him a metal resembling tin. In 1827 Wöhler isolated it by decomposing aluminum chloride by potassium; the metal was in the form of a gray powder, taking the brilliancy of tin under a burnisher. In 1845 Wöhler obtained the metal in small malleable globules of metallic appearance, by making vapor of aluminum chloride pass over potassium placed in platinum boats, but the metal thus obtained was very impure and scarcely as fusible as cast iron, being no doubt alloyed with the platinum in its preparation. It is to H. St. Claire Deville that the honor belongs of having isolated aluminum in a state of almost perfect purity, determining its true properties in 1854. If Wöhler was the discoverer of aluminum, Deville was the founder of the aluminum industry. On March 20, 1854, he announced to the French Academy in a letter to Dumas that he had produced aluminum without alkaline help, by the battery, and sent a leaf of the metal thus obtained. Bunsen succeeded in obtaining aluminum by the battery about the same time by a method similar to Deville's. Thus it is evident that the isolation of aluminum by electrolysis was the simultaneous invention of Deville and Bunsen.

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* Read before the Illinois State Dental Society, May, 1894.

At the beginning of 1855, Deville established himself at the chemical works at Javel, in France, in a large shed which the director M. De Sussex kindly put at his service. Such success attended his efforts here that on June 18, he presented to the Academy through M. Dumas large bars of pure aluminum, sodium and masses of aluminum chloride. The expense of all the experiments and work at Javel by which Deville was enabled to place the aluminum industry on a firm basis, was borne by the Emperor Napoleon III. So it seemed fitting that the first article made of aluminum was in compliment to the emperor, a baby rattle for the infant Prince Imperial, the Prince who afterward fell in a battle with the savage Zulus of Southern Africa. It was the metal made at Javel under the direction of Deville which was exhibited at the Paris Exposition in 1855. He had for his assistants two young men, Charles and Alexander Tissier. After assisting him for about two months in setting up his apparatus they were forced to leave the works on account of a misunderstanding between them and M. de Sussex. They were admitted to Deville's laboratory at the École Normale, and initiated by him into all those processes which they made use of afterward, then suddenly left, taking drawings of furnaces, details of processes, etc., which they not only made free use of, but even patented. In July, 1855, M. Chann, an honorable manufacturer of Rouen, established works in which Deville's processes were to be applied, and intrusted the direction of it to the Tissier brothers. In 1858 the Tissiers wrote and published a small work entitled "Recherchés sur l'Aluminium," which in view of what Deville could have written about the subject was a decided misrepresentation of the results thus far accomplished. Deville thought the industry was yet too young to merit any sort of publication, but the Tissier's book no doubt stimulated his efforts in writing his noted work "De l'Aluminium," in 1859, in which he acknowledges the writing was due to his pride wherein he decided to take the pen to speak of his work "only to avoid seeing it belittled and disfigured." He concludes his book with these words: "I have tried to show that aluminium may become a useful metal by studying with care its physical and chemical properties, and showing the actual state of its manufacture. As to the place which it may occupy in our daily life that will depend on the public's estimation of it and its commercial price. The introduction of the new metal into the usages of man's life is an operation of extreme difficulty. At first aluminium was spoken of too highly in some publications, which made it out to be a precious metal; but later these estimates have made it out attackable by pure water. The cause of this is the desire which many have to see taken out of common field-mud a metal superior to silver itself; the opposite opinion established itself because of very impure specimens of the metal which were put in circulation. It seems now that the intermediate opinion, that which I have always held and which I express in the first lines of my book, is becoming more public and will stop the illusion and the exaggerated beliefs which can only be prejudicial to the adoption of aluminium as a useful metal. Moreover, the industry, established as it now is, can be the cause of loss to no one; as for myself, I take no account of the large part of my estate which I have devoted, but am only too happy, if my efforts are crowned with definite success in having made fruitful the work of a man whom I am pleased to call my friend—the illustrious Wöhler."

Beauxite and cryolite are the minerals most used for producing aluminum and their preference lies mainly in their purity. I have here some fine specimens of beauxite, a hydrated aluminum oxide its formula being $Al_2O_32H_2O$ which came from Little Rock, Arkansas. Beauxite until recently has not been found in the United States, but in 1887 a deposit was discovered in Floyd County, Georgia, which contains titanic acid and resembles the mineral found in Asia Minor. It varies in color from light salmon to dark red according to the admixture of iron sesquioxide. This beautiful specimen is from Georgia; it is also found in Alabama. It was first found in France near the town of Beaux, hence its name. Large deposits are found in other parts of France. It is also found in Austria at Freisstritz and Wochein in Styria where it is called Wocheinite. Deposits similar to those of France are found in Ireland at Irish Hill, Strait and Glenravel. Deposits are also found in Hadamar in Hesse, at Klein Steinheim Langsdorff and in French Guiana. Cryolite, aluminum sodium fluoride, was first found in Ivigstuk in Arksut Fjord, West coast of Greenland, where it constitutes a large bed or vein in gneiss. It is a snow-white semitransparent mineral when pure. It is fusible in the flame of a candle, and on treatment with sulphuric acid yields hydrofluoric acid. Its first use was by the soap-makers for its soda and is still used for making soda and alumina salts, and to make a white glass which is a very good imitation of porcelain. The specimen exhibited is from Greenland, its formula being $Al_2 N_6$ 6 NaF. The only known deposit of cryolite in the United States is that found near Pike's Peak, Colorado where it occurs in small masses as a subordinate constituent in certain quartz and feldspar veins in a country rock of coarse reddish granite. Here is also a specimen of kaolin, white china clay, from Aiken, S. C., its formula being $Al_2O_3\ 2SiO_2\ 2H_2O$. This piece of corundum, aluminum oxide, is from Buncombe Co., N. C., its formula being Al_2O_3. The small specimen of gibbsite, a hydrated aluminum oxide is from near Seidersville, Lehigh Co., Pa., its formula being $Al_2O_33H_2O$. The beautiful piece of diaspore, also a hydrated aluminum oxide, is from Chester, Mass., its formula being $Al_2O_3\ H_2O$. Ot these minerals, beauxite, cryolite and kaolin are the commonest. Corundum is valuable as an abrasive, while the other two, gibbsite and diaspore, are comparatively rare; if they should ever be discovered in a large amount they would be very valuable as aluminum ores.

In the reduction of aluminum many processes are in vogue. Deville succeeded in reducing it by electricity in 1854, as previously mentioned, but the expense was too great with the methods of generating the current at that time, therefore he adopted what is known as the process of reduction by potassium or sodium, which is still carried on with the latest improvements at Nanterre, in France. In the United States the electrolytic process is used by The Cowles Electric Smelting and Aluminum Company, of Lockport, N. Y., where a great water power drives their immense dynamo.

The Pittsburg Reduction Company, who have works at New Kensington, Westmoreland Co., Pa., and Niagara Falls, N. Y., also use the electrolytic process under the patents of Mr. Charles M. Hall. They manufacture a very pure metal, which is guaranteed ninety-nine per cent pure. The plate here exhibited is of their manufacture, the dentures were also swaged from some of the same metal. There are many other methods of reduction, but time will not be taken to name them, much less to describe a single one of those already mentioned. Ludwig Grabau, of Hanover, Germany, a patentee of a process for the reduction of aluminum fluoride by sodium, the principal object of which has been to produce metal of a very high degree of purity, where every precaution is taken to procure pure material and prevent contamination during reduction, said in a paper written in 1889: "The purifying of impure aluminum is accompanied by so many difficulties that it appears almost impossible. It is, therefore, of the greatest importance to so conduct the operation that every impurity is excluded from the start. Molten aluminum compounds, whether a flux is added or not, attack any kind of refractory vessels and become siliceous if these vessels are made of chamosite or like materials, or if made of iron they become ferruginous. These impurities are reduced in the further processes and pass immediately into the aluminum as iron, silicon, etc. Evidently the case is altered if an aluminum compound, which is infusible, can be used advantageously. Aluminum fluoride is infusible and also retains its pulverized condition when heated up to the temperature needed for its use; it can, therefore, be heated in a vessel of any kind of refractory material or even in a metallic retort without danger of taking up any impurity."

Much of the commercial aluminum which dentists attempted to make plates from twenty-five years ago contained from two to three per cent of silicon and from five to eight per cent of iron, with traces of sodium, copper, lead and other impurities, which under the most favorable conditions resulted in disintegration. The iron in the metal oxidized in the fluids of the oral cavity leaving holes and fissures in the plate.

The cast plates of so-called aluminum are never made of even commercially pure metal on account of the shrinkage, which is $\frac{17}{64}$ of an inch to the foot, but are in fact aluminum alloys. One of the best known, that of Dr. C. C. Carroll*, contains:

Aluminum	90 to 93 parts.
Silver	5 to 9 "
Copper	1 "

This alloy when cast under slight atmospheric pressure, which may be obtained by a continuous current of air from a bulb blower, gives perfect castings, is very white and easy to work. The addition of copper reduces to a minimum the shrinkage of the alloy, also giving it a closer grain. It is claimed that the introduction of five per cent of silver benefits the metal—considerably increasing its hardness, capability of polish, making it whiter, denser and stronger. This small piece of plate and the ingots exhibited contain five per cent of silver, and were produced by the Cowles

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*U. S. Patent 373,221, Nov. 15, 1887.

E. S. & A. Co., at Lockport, N. Y. It is much harder than pure aluminum, and not so malleable.

Cast alloys containing not more than 95 per cent of aluminum show a crystalline structure, break short, and with a tolerably level surface.

The commercial metal, which is probably 98 or 99 per cent pure, may be forged and rolled with as much perfection as gold or silver. Its fibrousness is greatly increased by hammering and rolling; it also becomes sensibly harder after being worked, probably owing to the closing of the grain; its density is also increased. Commercial aluminum may be readily tested with a knife; if quite pure it cuts smoothly, the shavings turning up similar to pure tin, yet 95 per cent metal can hardly be cut at all, the shavings break off short and a fine grating is felt through the blade. Pure aluminum stands third in malleability, being exceeded only by gold and silver. In induction it stands seventh, gold, silver, platinum, iron, very soft steel and copper coming before it. Sheets of the metal are rolled down to 0.0007 of an inch in thickness and beaten into leaf as thin as gold-leaf. Its electrical conductivity is about 55, taking that of silver at 100, but is practically nonmagnetic. Is easily and readily welded by the electric process of Prof. Thompson. The soldering process has proven more difficult, yet there are a number of solders used successfully. A very good solder is formed of 45 parts tin and 10 parts aluminum, applied with a common soldering iron, without flux or preparation of the pieces further than having the parts to be united filed or scratched to a clean, bright surface. Mr. Joseph Richards,* of Philadelphia, makes a good solder for use with the blowpipe or with the iron. The formula is unknown to me, but is similar to the one mentioned except it contains phosphorus for its own flux. Here are some samples of the solder. It has been in use in Europe for more than a year, and is pronounced by Dr. Kiliani, the metallurgical expert and chemist of Berlin, as the only successful solder yet discovered. It is the solder used in the manufacture of canteens and helmets and various accoutrements for the German army.

MANIPULATION FOR DENTAL PLATES.

In making swaged plates take the impression in plaster, making a perfect model in plaster, varnishing with sandarac varnish, which you can easily make by dissolving gum sandarac in alcohol in sufficient quantity to make a ready flowing varnish. Where there is much undercut it is best to make a few detachable pieces with plaster and asbestos, leaving the outside shaped in such a manner that it will readily withdraw from the sand, and the small pieces be replaced in the mold.

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*U. S. Patent 478,238, July, 1892.

For molding use good molder's sand mixed with one-third marble dust, sifted clean and made quite moist with water, which is preferable to oil, as the mold is soon warmed and dried sufficiently over a gasoline or gas stove. For dies use zinc, as the shrinkage is an advantage in making certain compensations which are conducive to a closer adaptation of the plate. For the counterdies use lead, making two for each case. Before pouring the lead on the die, cover it over with whiting and water mixed to the consistency of cream, and warm it before pouring. Make a pattern in the usual way with tin or lead foil. Now take a piece of aluminum plate of sufficient size rolled to No. 19 B. and S. gauge, anneal it over a large alcohol flame, or Bunsen burner, cleanse the surface with sulphuric acid and boiling water, and immediately dip in a solution of bicarbonate of soda, and thoroughly wash with warm water and soap, using the brush. Dry, and run through the rollers, setting them close enough to bring it to No. 20; but just before rolling place on the plate a piece of fine ricenet with plenty of sizing, passing it through with the metal which gives the fine network surface noticed. People who wear the plates say the network surface feels more pleasant and adheres better than a smooth one, besides there is never any occasion for the depression known as an "air chamber."

In swaging use horn mallet and smooth pliers, always keeping a piece of thin tissue paper between the plate and die, also between the counterdie and plate. The tissue paper is a great protection in keeping the plate clean, as there is always danger of driving small particles of zinc or lead into the texture of the plate. It must be frequently annealed, being careful not to overheat, bearing in mind that the melting point of aluminum is about 1,150° F. If the plate is heated quite hot and dropped in cold water it becomes very soft, but at the same time will lose its elasticity, which is undesirable; it should be left to cool gradually, as when worked thus it will be elastic like coin gold. A German firm engaged in making aluminum states that by long gradual cooling from a red heat, aluminum can be made so elastic that it can even be used for hair springs for watches. After it is well adjusted to the die, the rim for either upper or lower denture is turned with a pair of pliers with smooth surface on the bite, and beaten down with the mallet, driving it home in the second counterdie without any paper.

The plate is now tried in the mouth and trimmed where necessary to a perfect adaptation, a rim of softened wax placed on it and the bite taken. It is then placed on the articulator and the teeth set up, using either gum or plain according to the operator's choice, attaching the teeth with wax in the same manner as for rubber attachment for a gold plate. In order for a perfect articulation it is necessary to again try in the mouth. When the teeth are satisfactory, and properly placed, mark the plate with a sharp pointed instrument at the margins of the wax, and flask with plaster in a regular vulcanite flask.

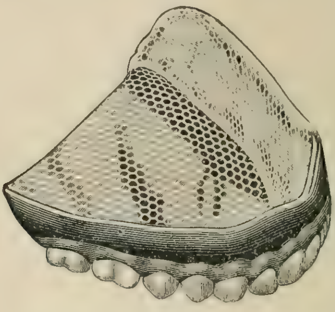
FIG. 1.
Full Upper Set. Gum Teeth.

Separate the flask after warming it, remove all the wax with spatula and boiling water, and also carefully remove the plate, cleansing it with boiling water. Next place the plate on the die, and supply some lubricant as turpentine and sweet oil, or stearic acid 1 part and turpentine 4 parts. Apply on the portion to be etched which is represented between the lines marked before the removal of the wax, this will prevent the tool from sliding and cause it to cut as readily as into pure copper. The etching is made with chisel and hammer, an assistant striking while you hold the plate firmly on the die, and move the chisel as desired almost in the same manner as specified in the patent of Dr. A. Clark.* In his method no rim was turned and the etching was all the same, making rows turned in opposite directions. In my method the first row is made with a straight edge chisel about 3 millimeters wide, turning the handle of the chisel outward, this forms a line of etching that will effectually prevent the thin edge of rubber lifting from the plate; the remaining part is etched in rows around the plate, making each row by leaning the chisel in the opposite direction. A turning chisel with a bevel edge about 5 millimeters wide is suitable for this, being careful not to drive the point through the plate. The rim is opened a little before etching so the rubber will pass under the turned over portion. After the etching is completed drive the margins up to the die with a piece of hard wood, as the etching process will cause a little spreading of the plate at some points. Now place the plate in a porcelain or china bowl and pour on it about half an ounce of full strength sulphuric acid, adding four times as much boiling water; in about a minute remove and plunge in strong solution of bicarbonate of soda, rinsing and brushing in clean water with a little soap. If not bright and clean repeat the process. When dry varnish all that portion not etched with a good coat of sandarac varnish. As soon as the varnish is hard replace the plate in the flask and pack the space around the teeth with pink or red rubber, in quantity sufficient, heat and close the flask and vulcanize one hour and thirty minutes at 320° F. or 85 lbs. steam gauge. The sandarac varnish protects the plate, keeping it bright and clean, and is readily removed afterward with a little alcohol. In polishing, the rubber attachment is filed and dressed with scrapers and polished in the usual way, being careful not to cut or scratch the metal portion of the plate.

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*U. S. Patent 86,131, Jan. 26, 1869

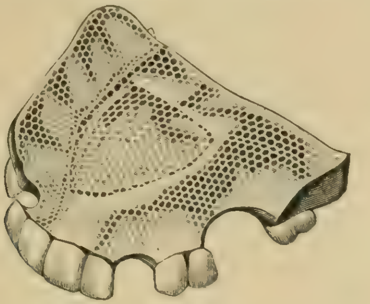
FIG. 2.
Partial Upper Set Plain Teeth.

Aluminum will take and retain a very high polish, but the use of old means is not effective, as the bloodstone and burnishing iron tear the metal as fine stone does glass. In the absence of any special polish the ordinary cold brass polish will be found very efficient if ground fine enough. The Pittsburg Reduction Co. furnish an excellent polish consisting of stearic acid 1 part, Fuller's earth 1 part, and rotten stone 6 parts, the whole ground very fine and well mixed. They give it the name "Almeta Polish." A sample of it is exhibited.

The best means of burnishing is to use on the lathe a piece of soft wood made in the shape of a cone, and soaked in olive oil; this closes the grain of the plate and gives a most brilliant polish. For full upper dentures there is no better material than aluminum, and for the small partial plates it is especially desirable, for lower sets where the ridge is much absorbed its lack of weight seems to require some stay. Have made one set with the Stedman springs which are very satisfactory. You will observe the method of placing them in the set exhibited, the spring posts hold both plates very firmly in place. Where there is a good alveolar ridge no stay or spring is required, the lower plate remaining in place without any mechanical device. For small sections held in place with broad clasps of aluminum, annealed in the manner mentioned in order to retain sufficient elasticity, it offers very large possibilities, as these can be placed in the mouth at a moderate expense, frequently serving the purpose of expensive bridgework, although these clasp plates are not recommended, only in some exceptional cases. The clasps may be soldered to the plate, fastened with the rubber attachment, or fashioned from the plate itself like this sample. There has been a patent granted for taking the impression

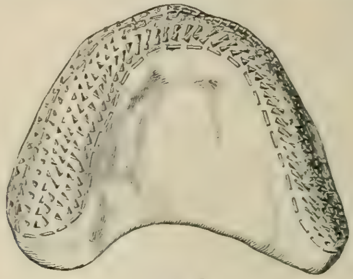

Fig. 3.
Full Upper Plate Etched Ready for Rubber Attachment.

for such cases with the clasps on the teeth, similar to Dr. Noble's method mentioned in Harris' work, or some similar process, but all infringement is avoided by taking impression and making the small die with Babbitt metal or something similar, as no shrinkage is desirable here. The piece is swaged from plate No. 22 B. & S. gauge; the articulation, attachment, flasking, vulcanizing, and finishing all being the same as for full plates. For appliances in orthodontia aluminum is vastly preferable to any cheap metal yet offered in place of gold or platinum. Very erroneous statements with reference to the chemical properties of aluminum have often been published. Air, wet or dry, has no action on it. Water has no action either at ordinary temperature or at the boiling point, 212°. Aluminum leaf, however, will slowly decompose water at 100°. Sulphuretted hydrogen exercises no action, as may be proven by leaving the metal in an aqueous solution of the gas.

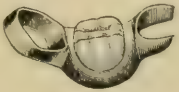

Fig. 4.
Removable Bridge, Right Lower.

Sulphuric acid diluted in the proportion most suitable for attacking metals which decompose water has no action; and contact with a foreign metal does not help, as with zinc, which fact tends to remove aluminum considerably from those metals. Concentrated sulphuric acid dissolves it rapidly with the aid of heat, disengaging sulphurous acid gas (SO_2). Nitric acid concentrated or weak does not act on it at ordinary temperature. In boiling nitric acid, solution takes place very slowly. Hydrochloric acid weak or concentrated dissolves the pure metal very slowly. Hydrochromic, hydriodic, and hydrofluoric are said to act very similarly to hydrochloric. Acetic acid, or a mixture of acetic acid and common salt in solution with water has a slight action which is almost inappreciable if the metal is pure. Aqua ammonia acts very slowly, producing a little alumina. Strong alkaline solutions act with great energy on the metal, transforming it into aluminate of potash or soda. However, it is not attacked by caustic potash or soda in fusion. Tissier found that aluminum may be made to unite with mercury merely by the intervention of a solution of caustic potash or soda. If the surface of the metal be well cleaned or moistened with the alkaline solution it is immediately melted by the mercury and a shining amalgam forms on the surface. The aluminum in its amalgam is very easily acted upon and behaves like a metal of the alkaline earths, which is interesting to aluminum amalgam advocates. Recent experiments by Prof. George Lunge, Ph. D., in which tests were made by immersing aluminum in coffee, tea, beer, wine, and many acid solutions, confirm the chemical properties first mentioned, with many others, proving that no metal to be worn in the mouth other than gold, is less acted upon by food, liquids or the secretions of the oral cavity. Due acknowledgment is made to Prof. Joseph W. Richards, of Lehigh University, Pa., for much valuable data in this paper. His work is the only one which presents a systematic treatise on aluminum, in the English language, and ought to be in every dentist's library.

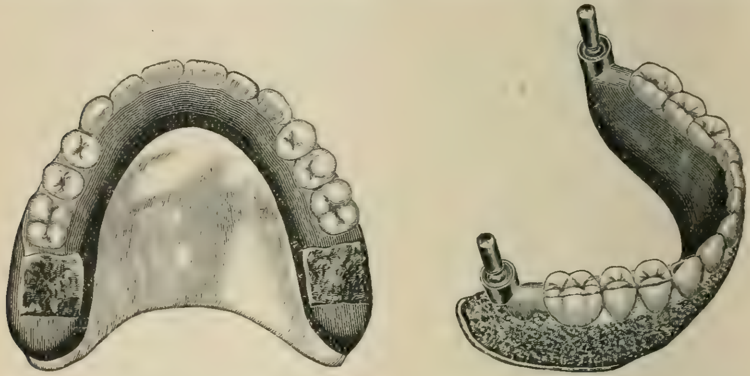

Fig. 5. Fig. 6.

Full Upper and Lower Sets, Plain Teeth, with Stedman Springs and Granulated Rubber.

The shorter name aluminum has been used as the one generally adopted by manufacturers and workers in the metal in this country, although aluminium is considered more euphonious by some of the best teachers and metallurgists.

For the men of talent and genius in the profession many other uses of this seminoble and easily wrought metal will be discovered, bearing in mind James Russell Lowell's famous lines: "The man of talent takes the existing moulds and makes its castings, better or worse, of richer or baser metal, according to knack or opportunity; but genius is always shaping new ones, and runs the man in them so there is always that human feel in its results which gives us a kindred thrill."

ETIOLOGY OF DENTAL CARIES.*

BY A. H. PECK, M. D., D. D. S., CHICAGO, ILL.

Etiology, "That branch of medical science which treats of the causes of disease." Hence, we are to consider the causes of the disease known as "dental caries," which latter means a chemical disintegration or wasting away of the constituent elements of the tooth substance, molecule by molecule.

In a study of diseases in general we find the causes divided usually into two classes, viz.: predisposing and exciting. The same classification we shall apply to the special disease under present consideration. By a predisposing cause is meant any unnatural or pathological condition of the patient or the part rendering it more liable to attack, but which condition is not in itself sufficient to, or capable of, causing an actual inception of the disease. By an exciting cause is meant the presence of that condition, that necessary element, or that indispensable something which is in itself directly responsible for the actual beginning of the disease.

Before entering into a consideration of the real causes of dental caries, both predisposing and exciting, I trust you will not consider it out of place, but rather will find it to be interesting, if we spend a few minutes in referring to the ideas of the earliest investigators and writers upon this subject. And this I consider of interest, not only as setting forth the actual ideas of these men, but to me it is a pleasure in studying this subject to especially note the progress or growth of thought of each succeeding investigator, how step by step they gradually came a little nearer the truth, until at the present time we find ourselves almost exclusively indebted to the efforts of two men for what we actually know in connection with the true etiology of dental caries, Drs. Miller and Black. Says Dr. Black, "this subject has been treated by very ancient writers, but the works of Boudett and Jourdain, which appeared between the interval from 1754 to 1766, seem to have been the foundation of the scientific investigations that were undertaken in after years, and marked an era of awakening thought and of experimental study." The writings before this time, "seem to have been based more upon mere casual observation than upon any definite line of scientific investigation." The prevailing opinion at that time was that caries resulted from inflammation, and their "constant endeavor was to account for it upon that hypothesis." John Hunter whose writings bear evidence of a thorough investigator and careful writer, while considering caries a result of inflammation, similar to necrosis of the bones and mortification of the soft parts, expresses himself as dissatisfied with this theory but proves himself disappointing in that he presents nothing new on the subject.

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*Read before the Illinois State Dental Society, May, 1894.

At the beginning of the nineteenth century, the investigators still held to the theory of inflammation, but made a marked advance over their predecessors in that they began to particularize. A Mr. Fox, in 1806, advanced the theory that the inflammatory process had its origin within the substance of the lining membrane of the pulp chamber, the membrana eboris, which in severe cases would deprive the dentine of its nourishment, resulting in its decomposition and the consequent formation of the carious cavity.

In 1829, a Mr. Bell differs from the preceding theory in that he regards the inflammatory process as having its origin in the circumference of the dentine just underneath the enamel, and that the area of dentine tissue thus involved dies, and remaining there becomes an irritant to the surrounding tissue, which latter becoming involved in the inflammatory process also dies. Thus in this progressive manner the destructive process continues, finally resulting in the wasting away of the entire crown of the tooth. A Mr. Köcker goes a step further than his predecessors in his endeavor to explain the phenomena of this disease. While admitting that the tooth structure is deprived of its nourishment through the process of inflammation, he adds that the part thus diseased is finally disintegrated through the medium of some chemical agent.

About 1830 this hitherto popular theory was discredited by very many, and with little difficulty was shown to be incorrect. One of the most effective arguments against it was the fact that human teeth, having been extracted, prepared and mounted as substitutes, also artificial teeth carved from ivory, bone, etc., were alike subject to the ravages of decay, and that, too, in a manner precisely the same as the natural organs. Hence the impossibility of decay resulting from any of the vital processes connected with the tooth itself. And in the language of Dr. Black, "the cause of decay must be regarded as extraneous to the teeth and acting upon them from without."

Robertson, of England, in 1835, taught in a published work, that caries was the result of a chemical disintegration of the tooth substance through the medium of an acid, generated from the decomposition of particles of food which found a resting place at various points about the teeth, and denied, absolutely, that inflammation played any part in the formation of the carious cavities.

Dr. George Watt, whose memory is still fresh in the minds of many of you, was the author of what is commonly known as the "mineral acid theory." He contended that decay was caused chiefly by the acids, sulphuric, hydrochloric, and nitric; sulphuric acid being responsible for the production of the black decays—nitric, the white—and hydrochloric, the intermediate colors.

There are a number of other theories advanced by different ones, of which we might speak with profit, such as the very ingenious one of Bridgeman in his essay, in which he says in substance, that caries is the result of peculiar electrical conditions, the crown of the tooth forming the positive electrode, and the tissues serving to retain the tooth in its socket, the negative. These conditions being intensified through abnormal qualities of the fluids of the mouth, the lime salts in the crown of the tooth are liberated, the acids with which they were combined being set free, thus resulting in a molecular disintegration of the substance of the dentine forming carious cavities. But fearing I have already given too much time to this part of the subject, will pass at once to what is generally accepted at the present time, and undoubtedly is the correct theory of dental caries.

First, the predisposing causes. Faulty formation of the teeth. We shall consider this not only as regards the malformations of the teeth, but also with reference to the character of the constituent elements of the tooth itself. The variations in form from the normal which most favor the inception of decay, occur as pits and grooves, especially on the occlusal surfaces of bicuspids and molars, the buccal surfaces of molars, and the lingual surfaces of the upper anterior teeth.

These defects afford lodgment for particles of food, until the acid which actually dissolves the lime salts from the tooth structure is evolved through the process of fermentation. The fungi once implanted in these depressions, and the corrosive action once begun, the waste of tissue progresses little by little, until finally entrance to the dentine is accomplished.

If in the constituent elements of the tooth, the organic matter is in excess over that of the normal, it must necessarily follow that the substance of the tooth generally is softer than it otherwise would be. In consequence of well-known physical laws, the corrosive agent will attack the substance of such a tooth much more readily, and the destructive process will be carried on at a much more rapid pace than in connection with a tooth of normal density—hence the inducement held out to the acid to inaugurate its work of devastation, and the means afforded for its rapid progress through the faulty make-up of the substance of the tooth itself.

The manner in which the teeth are proximated has much to do in predisposing them to caries, and especially if the proximating surfaces are broad and flat, and also if they do not at any point touch each other, other things being equal, favor the lodgment of the food and fungi until fermentation shall have produced the substance necessary for the beginning of caries. Again, in the proximate spaces when the gum festoons have been partially or completely destroyed, thus affording abundant space for the lodgment, retention and evolution of those necessary elements to the inception of decay, also any malposition of the teeth in the arch of a nature to favor such lodgments, predispose them to decay.

Hereditary influences are exceedingly important as predisposing the teeth to caries and must not be overlooked. That peculiarities, varying from the normal, in the formation of the teeth are directly transmissible from the parent to the child is generally accepted as correct by the best authorities, and especially malformations in the form of the teeth which we have already observed to be very important factors in predisposing them to decay.

Morbid and unnatural conditions of the saliva and other fluids of the mouth, and especially when acid in reaction, as they are frequently found to be, and in many cases to a considerable degree, must be regarded as affording favorable environments for the development and propagation of those elements necessary to the inception and progress of the carious process. And this brings us up to the consideration of the exciting or the actual cause of decay of the teeth. And the substance which produces this diseased condition of the teeth is *lactic acid*, as *per* the results of the experimentations of Dr. Miller.

(Certain numbers of *Independent Practitioner* of '84 and '85.)

To account for the presence of lactic acid in the mouth would involve a consideration of the fermentative process, and also of the essential physiological processes of all organized life—the former indeed comprising the latter—to-wit: (1) "The production or formation of a solvent which," says Dr. Black, "is usually an unorganized ferment, peptonizing agent or diastase, for the performance of the act of digestion, or the preparation of food material for absorption and assimilation. (2) Assimilation and nutrition, or the act of tissue building. (3) The formation of waste products, the act of denutrition, or the shedding out of material that has once been formed into protoplasm, or used in connection with the process of tissue building, and (4) the capability of reproduction in a definite line of forms." And by way of illustrating the physiological process of fermentation, what prettier example can we cite than that from the pen of the author last quoted, of the sprouting grain of corn, which, says he, "is composed of three natural divisions—the germ, the perigerm, and the starch envelope. The germ is the embryo plant; the perigerm (the scutellum of botanists) is the organ of digestion destined to serve the needs of the germ during its embryonic development; the starch envelope is the store of food to serve the young plant until such time as it shall have developed the organs with which it will be enabled to gather its own food. Under the influence of warmth and moisture, the germ is quickened into activity, and at the same time the perigerm elaborates a substance which is known as a soluble or unorganized ferment, the office of which is the digestion of the store of starch with which it is surrounded. This soluble ferment comes in contact with the starch granules, and converts this substance into glucose and levulose. This is exactly similar, physiologically, to the formation of the peptones by the gastric juice of the animal, and is the digestion which fits the food, the starch, for the needs of the developing germ of corn. An examination of the soil in which this corn is grown, will reveal the fact that it has received acetic acid, this being one of the products of this physiological process, the other being the carbon dioxide given off in the air." This, if you please, constituting the type of the process of fermentation.

This leads us up to the statement that it is impossible for true caries, as we find it in the teeth of the human mouth, to have a beginning until these physiological processes of fermentation have been gone through with. And in connection with caries the elements essential to this process are *sugar* and certain *microörganisms* habitually developed in the mouth. Much of the sugar assimilated by the bacteria is taken directly into the mouth, but probably the larger quantity, however, is changed into such by the action of the ptyalin of the saliva upon the starchy substances. However, the bacteria seem to possess the power, in the absence of the ptyalin, by virtue of a substance it gives off, to transform starch into its appropriate food. Precisely in the same way as we observe the process of nutrition to be carried on in the human system, and, as in connection with all organized life everywhere, do we find it to be in connection with these bacteria. Food taken into the mouth, masticated saturated with saliva, passed into the stomach, there acted upon by the gastric and intestinal juices—in short prepared for assimilation by the system.

The nutritive portions, or those parts of the various kinds of food which can be utilized in building up the constituent parts of the body, are passed through their respective channels into the blood. The waste, or those parts which cannot be utilized, are cast off mainly as urea and uric acid. So, in connection with the bacteria of decay, their particular food, *sugar*, is taken in by them, and the nutritive portions immediately turned to the uses of their bodies, so to speak, that they may have a future existence, prosper, and be multiplied—that portion which they cannot so use being cast off in the form of *lactic acid*. And this is the substance that is responsible, directly, for the terrible destruction of the human teeth by this carious process. This it is that actually attacks the constituent elements of the tooth and molecule by molecule dissolves them away.

It is needless to say that the origin of all decays of the teeth is at the outer surface of that part of the tooth where the cavity is found. This lactic acid having been formed as described above, and under favorable circumstances, attacks the basis substance, the salts of calcium, of the enamel.

The manner in which the carious process effects an opening through the enamel tissue is essentially as follows: *First*, the enamel prisms are held together by a substance commonly spoken of as the interprismatic cement-substance. This constituent part of the enamel, in its general texture, is considerably softer, or at least more soluble than is the substance constituting the enamel prism itself. Hence, it most naturally follows that the acid will attack this substance and dissolve it away more readily than it does the substance of the prism. And I feel safe in saying that observations generally regarding the clinical history of caries of the enamel substantiate these statements. The cementing substance is dissolved away little by little, molecule by molecule, and in this way the corrosive action of the acid slowly but surely progresses until the entire thickness of the enamel has been traversed by it. Thus the substance which binds the enamel prisms in such close proximity, the one to the other, being destroyed, leaves the latter free to separate and fall apart. However, the prisms themselves do not by any means entirely escape the corrosive effects of the acid. It will almost invariably be observed, upon examination with the microscope, that their ends have been rounded—some but slightly, others to a greater extent. And not infrequently it will be observed that their substance has been wasted by the process throughout their entire length, in some cases very considerably, in others but slightly.* But rarely ever is it the case that they are entirely destroyed during the penetration of the tissue.

These openings through the enamel are oftentimes exceedingly small, indeed so minute are they as scarcely to be discernible by the naked eye. Upon reaching the surface of the dentine, because of the lateral ramifications of the branching endings of the dentinal tubules, and also because of the existence of numerous minute interglobular spaces just between the dentine and enamel tissues, the carious process is induced to spread laterally to some extent, before it will penetrated far into the substance of the dentine. As the process progresses within the dentine, and the spread in the lateral direction under the enamel becomes greater it must necessarily follow that the enamel tissue will be attacked on its inner surface. Thus from this point on the carious process becomes in a sense a two-fold one, prosecuting its deleterious work inwardly toward the pulp chamber of the tooth, and outwardly toward its circumference. In this way the enamel for a considerable distance in all directions from the original opening will have become so weakened as to be unable to further withstand the pressure brought to bear upon it by the force of mastication or otherwise, and breaks down. Thus is the external opening into the carious cavity suddenly and materially enlarged, leaving the margins more or less rough and uneven.

In the dentine, the destructive process is observed to be carried on substantially as follows: As has been stated above, and for the same reasons, the acid upon reaching the surface of the dentine extends in a lateral direction to some extent before penetrating to any considerable depth in the substance of the tissue. If the structure of the tooth is normal, this lateral extension at first will not be so great as in teeth whose composition does not contain the usual amount of inorganic matter. And more especially in those teeth where the union of the dentine with the enamel is imperfect, and more extensive interglobular spaces exist so that the immediate and more rapid lateral spread of the acid is thus facilitated. Usually the field of tissue invaded by the carious process is in form not unlike that of a cone with its "apex pointing toward the pulp, and its base at the inner surface of the enamel." And especially is this form the rule in teeth of normal structure. Otherwise a great deviation from this form will be observed. The carious process will spread over a much greater area of tissue before penetrating deeply, thus resulting in the formation of a cavity more or less broad and flat.

The fungi insinuate themselves at once into these natural openings—the interglobular spaces—and also virtually grow into the center of the tubules; the acid is constantly being produced, and penetrates the tissue to a considerable extent in advance of the penetration of the fungi. Indeed the substance of the tubules becomes completely saturated, and the acid passes beyond their limits into the intertubular cement substance, which latter being softer or more soluble than the matrix substance of the tubule itself, is completely dissolved away, thus affording opportunity for the resultance of one of the chief characteristics of true caries of the dentine, namely, the swollen or enlarged condition in which the tubules are so often found to be. In the course of time the walls of the tubules themselves will have been destroyed, thus resulting in the coalescence of two or even more of the tubules into one.

Thus in this progressive manner is the substance of the dentine destroyed by the carious process. It must be kept constantly in mind that in no instance, except, possibly, the two cases cited above, do the fungi of decay penetrate in advance of the corrosive effect of the acid. The latter goes before, destroys the tissue, effects an opening, and the former follow after insinuating themselves into the openings thus formed. In this way a constant production of all the necessary elements to the furtherance of the carious process is kept up.

JUMPING THE BITE.*

BY C. S. CASE, D. D. S., M. D., CHICAGO, ILL.

CONTINUED FROM MAY REVIEW, PAGE 305.

Among the models exhibited by me at the Dental Congress, to illustrate a paper relative to the correction of facial deformities, Case IV. was that of a boy fifteen years of age, whose upper incisors during a masticating closure of the jaws were nearly three-fourths of an inch in front of the lower at their occluding edges. In this position the second inferior bicuspids, antagonized with the second superior bicuspid and first molar, instead of with the two bicuspids, as in the typical occlusion. (See Fig. 2.) In closing the lower jaw forward the width of a tooth perfect occlusion of the bicuspids was nearly possible and seemed to be prevented

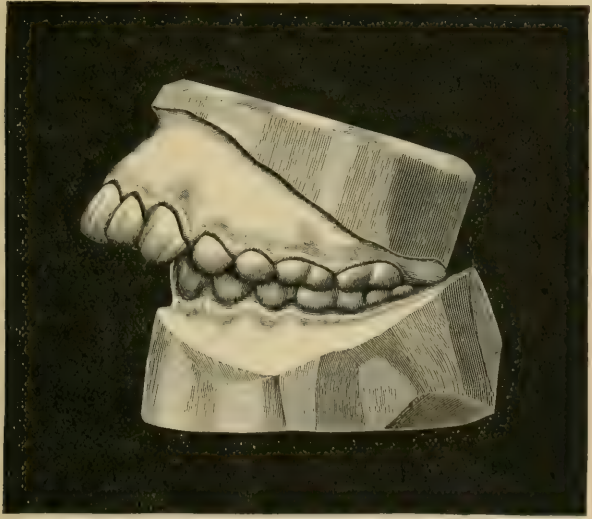

FIG. 2.

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*Read before the Odontological Society, March, 1894.

only by the striking of prominent molar cusps. The inferior incisors also, which were relatively too high, came sharply in contact with the gums just back of the superior incisors. Had the inferior incisors been forced into their sockets and the bicuspids raised, as has been done since, a more perfect result, so far as the occlusion of the teeth are concerned, could have been obtained by jumping the bite than in the course of treatment I have adopted. The forward movement of the chin also would have produced a vast improvement to the facial contour, which my operation will lack.

Since the congress I have commenced treatment on three cases of abnormal protruded upper jaw. In one, the bicuspid teeth in a masticating closure of the jaws occlude similar to the case just described, and in the position for jumping the bite perfect and normal occlusion could be obtained by a slight change in the position of the teeth. In other words, in both of these cases the mechanical arrangement of the temporo-maxillary articulation does not interfere—as it has been claimed to do—with obtaining a perfect result in the operation of "jumping the bite." The latter patient however is over twenty years of age, too old in my opinion to attempt an operation of this kind. In fact, with my present understanding of the demands and work of nature in constructing a new articular socket for the head of the condyle I shall not feel warranted in undertaking the operation of "jumping the bite" for any patient over fifteen æt. and then it will be with an appliance which can be worn with comfort while permitting the functions of the jaws; and one that will absolutely prevent the condyles from taking a more posterior position in their relation to the glenoid fossæ, until nature has performed such changes as are necessary to permanently hold them in that position.

In the discussion at the congress I said I doubted if this were possible. I now have in mind a partially developed scheme which I believe will fill the requirement.

One of the other two patients referred to is not a case for jumping the bite, because the lower jaw and chin—in a masticating closure of the jaws—is in its proper relative position to the forehead, bridge of the nose and malar prominences. And this I believe to be true in more than half the cases of abnormal protruding upper jaw. The upper anterior teeth and alveolar arch which support and give abnormal prominence to the middle features of the face should be reduced as this case is being treated and, as you are aware, others have been successfully treated by me with a reciprocating apparatus, so constructed as to direct the force upon the roots of teeth in phalanx.

A fair illustration of this most common type of deformity, or one which in my judgment should not be treated by an increased protrusion of the lower jaw in an attempt to jump the bite to obtain a more perfect facial effect, is shown in Figs. 25, 31 and 32 in the May, '92, number of the *Dental Cosmos*, which purports to represent the changes in facial contour of one of Dr. Kingsley's patients, where the bite has been jumped. These, however, may not be a fair illustration of the case in practice, any more than woodcuts can ever be depended upon for reproducing an exact copy of photograph or model.*

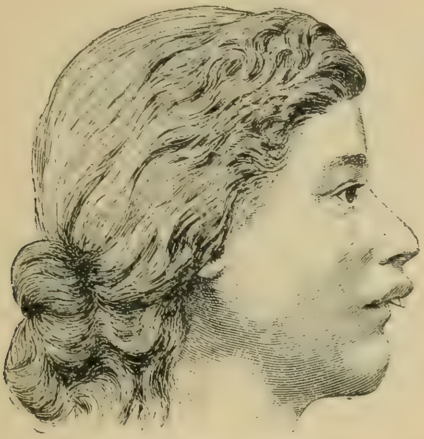

FIG. 25 (Dental Cosmos).

The third patient referred to is a young girl, thirteen years of age, whose teeth, when the case was presented, were in the common position of a mouth breather, though the lower jaw was decidedly retracted and the chin receding, while the occlusion of the lower bicuspids, as in the other case described, were too far back by the width of one tooth. This patient also could obtain almost perfect occlusion by throwing the lower jaw to the position for jumping the bite. The operation, so far, has consisted principally in reducing the abnormal prominence of the upper jaw, which is only partially accomplished, and in forcing the lower teeth forward to accommodate a second bicuspid which was completely out of the dental arch.

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*These illustrations are kindly loaned by Dr. Kingsley, that his critics may have the fullest opportunity to express their views, but he hopes that those who read this article will also read a reply to Dr. Case which will follow.—ED. REVIEW.

When I have accomplished everything possible in the regulation of the teeth and alveolus, I shall then attach my appliances for "jumping the bite" to be worn constantly for a year or more.

While I do not believe with Dr. Talbot that the operation of "jumping the bite" (or, more properly speaking, the operation of permanently protruding the lower jaw the width of a bicuspid), is impossible, I am not at present prepared to accept Dr. Kingsley's ideas of simplicity, and while it is possible that my preconceived notions of the difficulties which stand in the way of producing the desired structural and physical change of the temporo-maxillary articulation may in time become greatly modified, I can but believe that few will ever be able to accomplish the operation in a few months, or even a few years, for patients eighteen or twenty years of age, with an apparatus which can but act as an auxiliary to volition. However, when the operation has become more generally accepted within the legitimate possibilities of orthopedic surgery, with improved appliances which will hold the

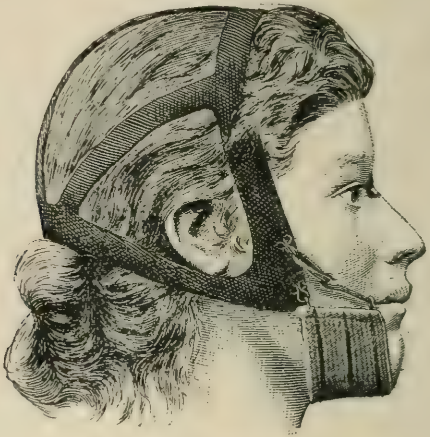

FIG. 31 (Dental Cosmos).

jaws in the desired relative position, we may then come to know that it is one which may be undertaken with a fair probablity of success even at the age of twenty or later.

In this connection it is interesting to review the methods of nature in completing the anatomical development of bones; and especially as regards the growth and final ossification of epiphyses and body at the articular ends, after the age of twelve.

"As the ossification of the cartilaginous diaphysis (or body) extends toward the articular ends, it carries with it a layer of cartilage, or the cartilage grows as it ossifies. During this period of growth the articular end, or epiphysis, remains for some time entirely cartilaginous, then a bony center appears in it, and it commences the same process of intracartilaginous ossification; but this process never extends to any very great distance. The epiphysis remain separated from the shaft by a narrow cartilaginous layer for a definite time. This layer ultimately ossifies, the distinction between shaft and epiphysis is obliterated, and the bone has assumed its completed form and shape."

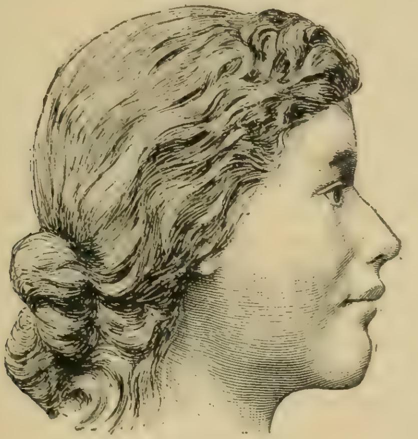

FIG. 32 (Dental Cosmos).

"The intracartilaginous ossification, and the growth by means of epiphyses are usually described from the long bones; but almost all the bones are primarily laid down in cartilage and a great many of the flat and short bones, grow by means of epiphyses." (Gray. *Structure and Physical Properties of Bone.*)

In the March, '94, number of the *Medical Record*, Chas. B. Ewing, M. D., Captain and Assistant Surgeon, U. S. A., in an article entitled "The Selection and Physical Examination of the Recruit," sums up as follows, in a very concise manner, this development of the bones, "during the so-called 'military age,' from sixteen to thirty years, as shown by our best anatomists, Allen, Thomson, Turner, Ellis and others. The epiphyses of the transverse and spinous processes of the vertebræ hardly commence to ossify before sixteen years of age, and it is not till after twenty years that the two thin circular plates form as the bodies of the vertebræ. The whole process is not completed till near the thirtieth year. The sacrum only commences to consolidate at the eighteenth, and is completed from the twenty-fifth to the thirtieth year. The fourth and third bones of the sternum are only united between the twentieth and twenty-fifth years, and the second is not united to the third bone before the thirty-fifth year. The epiphyses of the ribs commence to grow between the sixteenth and twentieth, and are completed by the twenty-fifth year. The epiphyses of the scapula join between the ages of twenty-two and twenty-five. The epiphyses of the clavicle begin to form between the ages of eighteen and twenty years. The internal condyle of the humerus unites at eighteen, but the upper epiphysis does not join till the thirtieth year. The epiphysis of the radius and ulna, the femur, the tibia and fibula, are all unjoined at eighteen years, and not completely joined till the twenty-fifth year. The epiphyses of the pelvic bones (crest of ilium, spine and tuberosity of ischium) begin to form at puberty and are completed by the twenty-fifth year." Hence, from the standpoint of developmental anatomy we must conclude that the soldier should not be enlisted before twenty. If however at an earlier age, his immaturity must be recognized and his training be proportionate to his growth. This is especially true when the effect of pressure upon the growing chest and contained organs is considered in connection with the weight of equipment. In moulding bones one of the chief elements in determining shape is *pressure*."

While the article in this particular is intended only for the purpose of discouraging the enlistment of soldiers before the age of twenty, on account of the influence which the duties of military life have in retarding or preventing the growth and natural anatomical development, it also presents ideas in the concise collation of research, that is important to the orthopedic surgeon.

A perfect understanding of developmental anatomy, of the immaturity of the bones when dental appliances producing a deviation from the natural forces of development may first be worn, and of the influence of all properly adjusted artificial forces in changing the shape, growth and structure of the bones before and even after the age of twenty, can but lead to a higher appreciation of the possibilities within reach of a skilled operator and to a more respectful consideration of the claims of men like Dr. Kingsley, however impossible their operations may seem viewed from a theoretical standpoint.

Dr. Black, in opening the discussion at the congress, introduced an idea which to me fully explains one form of variation from the normal shape of the lower jaw. Though the cause which he assigned, that induces nature to produce this condition is not wholly satisfactory to me, the fact still remains that, during the growth and development of the bones of youth, sufficient force is at times exerted from *some* cause to deflect the shape of the lower jaw to a more obtuse angle than it would otherwise normally assume, and that this is an interstitial change which occurs either in the body of the ramus or the neck of the condyle or both, proportioned to the disproportionate weakness of the bones and the peculiar force exerted. Therefore it goes without saying: if such a result is produced by natural though abnormal mechanical force, it certainly may be produced by artificial or extraneous mechanical force.

"Dr. Black: I will detain you but a few moments and speak to but one point, and that is the causation of the irregularities, so-called, in which we have protrusion of the lower teeth with open bite.

I wish some gentleman to sit here raised above the others for a few moments so that I may have a profile. I want to point out so my remarks will come home to you, the facial character of protrusion of the lower jaw with open bite and then see if I can make clear its causation.

First we have the chin dropped, and if the case has gone on to about the eighteenth year the chin seems unusually deep. There is an unusual depth from the edges of the incisor teeth to the base or lower border of the lower jaw.

The next important feature is an increased distance between the ear and the ascending portion or ramus of the lower jaw. The next is a straightening apparently of the angle formed by the ramus and body of the lower jaw. This is seen very markedly in some of these casts—Case I. particularly, and Case V.*

Moreover there is an increased fullness of the face at the sides and, after a movement forward, of the cheek bones. In many of the marked cases the face appears square, the lower jaw protruded, the angles of the jaw very much straightened, with inability to close the front teeth. These are the main facial characteristics apparent in these two models.

I do not know how many of you are intimately acquainted with orthopedic operations. Any of you who may be acquainted with these operations have learned from personal observation how easy it is to bend the long bones. In children they are very readily bent by any unusual strain.

Now I think I am ready to show you what I mean. Here is one of these cases in mild degree. (Exhibits a cast). And let me say that these cases occur in all degrees, to a thing that is just perceptible to the marked characteristics in Case I. We have the marked facial expression shown in this case and the teeth show an open bite.

The first factor in these cases is always, as I think, some little irregularity of the teeth. I have under my observation now a boy in whom I am watching this growth. It begins usually at about the seventh or eighth year. It does not attract attention at this age, but as the patient grows older it grows with the patient until about the nineteenth year. From that time on there is a slight amelioration, which is so slight as to amount to nothing. It is practically permanent. In this cast, when the first molars came into place and made an occlusion, the cusps of the upper molar struck a little too far back on those of the lower molar, and the result was that the lower molar slid forward of the upper one every time the little fellow closed his mouth. The bite jumped the cusp. How can that produce all the facial characteristics of which I have been speaking?

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*Referring to casts which I had used to illustrate the paper I had previously read. I may here say that the deformity in Case I. was caused, to my certain knowledge, by mouth breathing, and that the narrowness of upper jaw compared to that of the lower had always been such as to make it impossible for the occlusion of the teeth to exert any influence whatever in producing the deformity, while Case V. was unhappily chosen because it was a completely closed bite—the lower incisors lapping in front of the uppers, and an inherited deformity of long standing family type.

I have here a skull which I picked up to-day, and prepared for the demonstration by sawing off the condyloid processes and hinging them so that they may be bent backward and downward. Now we have the muscles closing the mouth acting upon the inclined plane formed by the misplaced cusps, with the tendency of the articulation to slide the jaw forward. The head of the bone being drawn upon the articular eminence of the glenoid cavity gives us another inclined plane, acting in the opposite direction. What is the result? The bone is bent thus (illustrating) and there is your bite.

Now to recapitulate the points briefly: We have the six year molars coming into occlusion in such position that the cusps have the effect of sliding the lower jaw forward. This brings the articular surface of the condyloid process on to or partially on to the anterior articular eminence of the glenoid cavity, and places it on an inclined plane, which tends to draw it backward to its place in the cavity. Now we have an inclined plane formed by the cusps sliding the jaw forward and by the anterior eminence of the glenoid fossa drawing it backward, while the muscles closing the mouth are acting between them. The result is that the condyloid process is bent backward and downward, the body of the bone moved forward, while the teeth occlude on the molars only."

In a paper that has already been prolonged to a tiresome length for the purpose purely of bringing the operation of "jumping the bite" before you for your intelligent contemplation and discussion, I feel hardly justified in stepping aside from my subject and fully expressing my ideas in regard to causes which tend to give the irregular form to the lower jaw, outlined by Dr. Black, whose remarks were introduced into this paper for the purpose of showing that such a form is at times produced from post natal causes. However, I hope you will bear with me in a few brief remarks.

You are aware that it is a well-established fact that the open bite or lack of occlusion of the anterior teeth is a condition most common with mouth breathing patients whose mouths are partly open almost all the time, and widely open during sleep. What are the mechanical forces that are acting upon the lower jaw almost constantly in this position during the years of its structural and physical development from a simple to a marked change of

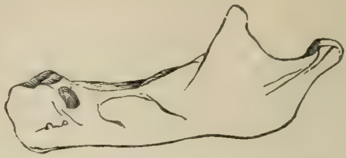


FIG. 3. At Birth.

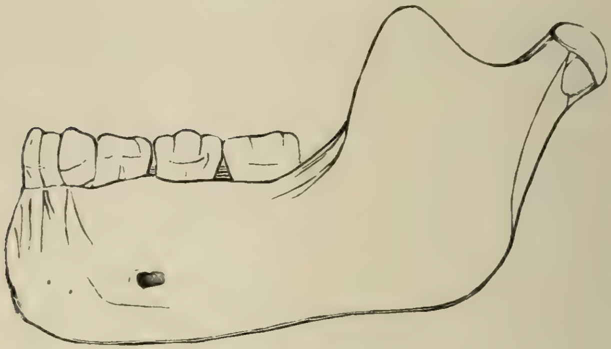


FIG. 4. At Puberty.

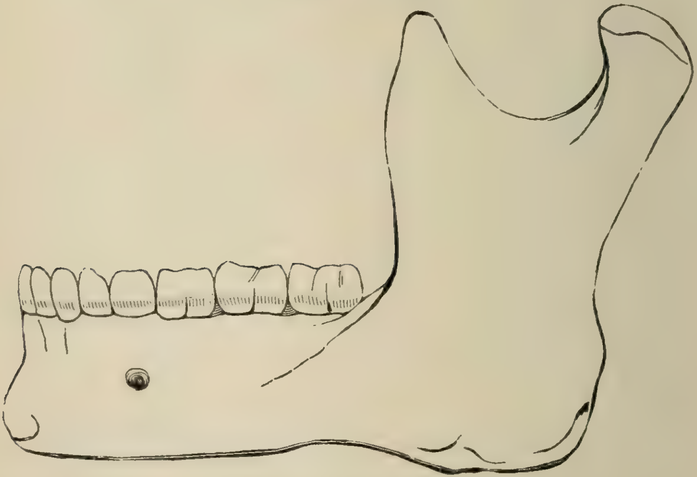


FIG. 5. In the Adult.

form, as shown in Figs. 3, 4 and 5 (Gray's Anatomy), and too during a time when the slightest unnatural force, acting constantly, will tend to deflect them from assuming a normal shape and position?

Admitting that the muscles are more or less relaxed in the ordinary performance of mouth breathing, whether asleep or awake, yet the fact that the lower jaw differs from other bones that are sustained by osseous attachment at two or more extremities or those which are not obliged to depend upon muscles to sustain their weight during rest, is of the most vital importance in considering the influence of forces which tend to deflect it from the natural form of its development.

The lower jaw is a lever of the third kind, whose long arm or anterior extremity is pulled downward partly by its weight and partly by the os-hyoides muscles. The glenoid cavity is the "fulcrum" in which its posterior extremity rests. The masseter and pterygoid muscles—attached much nearer to its posterior than its anterior aspect—is the "power" which sustains its weight and the down pull of muscles and tissues.

The greatest force—as with other levers—is brought to bear upon the short arm, or along the ascending rami and condyloid processes. It must be remembered also that in childhood, during its more pliable and undeveloped state, this portion of the bone is more nearly on a line with the body of the jaw and proportionately more at right angles with the direction of power of the sustaining muscles, which is always obliquely forward and upward—the tension forward being increased when the mouth is open.

From this explanation it can be seen that the tendency of these various forces is to increase the obliquity of its natural angle, obliging nature to constantly combat this influence in giving to the jaw its proper form. Again, whenever the mouth is open, the condyles invariably slide forward and rest against the posterior plane of the articular eminences—thus increasing the tendency with mouth breathers to bend the condyles backward at their necks with the effect—as explained by Dr. Black—of protruding the lower jaw and opening the bite in front by reducing the altitude of the rami.

In giving my opinion of what I believe to be the principal cause of the " open bite," it is with no view of detracting from the value of that imparted by Dr. Black; the principal truth which he introduced still remaining, whatever mechanical force produces the effect.

To me it seems more reasonable to believe that with mouths which are almost constantly open, as in mouth breathing, the various forces which are exerting an almost continuous pressure at right angles with the condyloid processes in their pliable and undeveloped state will have a greater influence in preventing the ascending portion of the lower jaw from assuming its natural upright shape, than the force which is exerted occasionally by a slight malocclusion of the cusps of the first permanent molars, whose occluding position in this early stage of their eruption *must be that which is permitted by the deflecting influence of the closure of the jaws.*

The fact that the open bite is not an uncommon condition with mouth breathers, who are no more liable to have that peculiar occlusion of the molars that would tend to force the lower jaw forward than other people, is also in favor of the theory I have ad-advanced.

Another Death From Chloroform.

By A. C. Hewett, M. D., Chicago, Ill.

I am induced to give the following, furnished me by the wife of the deceased, to emphasize, if possible, the protest I have heretofore spoken and published against the use of chloroform in dental practice, to *full anæsthesia :*

J. C. Nutting, f Chicago, on business in the mining district, now famous, of Cripple Creek, wished to be rid of an aching tooth, went to a dental office and requested that chloroform be given. A physician was called in who administered the drug ; the dentist extracted the tooth *painlessly*. Mr. Nutting was dead. "He did not regain consciousness."

The last five words tell the story of the wrong. What an autopsy showed, or might have revealed, I am not informed. If organic, cardiac or other disease rendered chloroform dangerous, it might and should have been diagnosed. In any condition, for so slight an operation as extracting one tooth, or a dozen, chloroform should not be pushed till unconsciousness supervenes. When mental processes and volition are, by any anæsthetic, held in complete abeyance, the patient is taken to the brink of the "dark cañon."

I am on record in the Review and elsewhere as advocating the general use of chloroform in dental practice and oral surgery, but not beyond obtunding influence. In illustration :

Not a half hour after the tearful recital of the foregoing by the bereaved wife, a girl of about ten years, fair haired, slight and nervous, was brought to my office by her mother, who said, "There's a snag in her mouth that has got to come out, and no use talking." On looking, I found a retained deciduous "snag," wedging ingrowing permanent teeth. Cocaine applied to the gums, and a few inhalations of chloroform from a bottle brought color to a pale face, quiet to her apprehensive trembling and aided me in a leisurely removal of the offender. Without waiting to free her mouth from blood, she exclaimed, "O, doctor, isn't that nice! I knew all you did, but it only hurt me just a little. I shall never dread it again." Notwithstanding Mr. Nutting's sad case, I did not fear to use the obtundents, and the mother, daughter and operator were alike delighted.

It is with much pride in the dental profession, and an equal sorrow for the medical that I can testify to caution and success in the former in the use of anæsthetics, as compared with the latter. Under the hands of surgeons in hospitals and infirmaries, many deaths occur where anæsthetics are used, that never receive the publicity of even a newspaper paragraph. "Death from shock under operation" is the professional report. Whether shock from the knife, or shock or "drowning" from the anæsthetic will never be known, and can only be guessed at till a more accurate knowledge is acquired by aspiring operators, and a more intelligent mode of administration is adopted.

Deaths in dental offices acquire immediate publicity, and justly become the subjects of searching scrutiny. The very rarity of these latter occurrences speaks in praise of the caution and conservatism of dentists; but unfortunately, at present, some teeth have to be extracted, and oral surgery resorted to. Shock from pain or nervous timidity in the patient often brings strong pressure to bear upon the professional man, that anguish may be mitigated and dread modified; but no amount of pleading should make the dentist yield, *if danger lies in the agent.* On the contrary, if the harm lurks in the procedure rather than the drug, it were unwise not to modify the method, and answer the call.

Hence, having undiminished faith in a way of pain mitigation (perhaps not the best) I may at the risk of needless repetition, urge its adoption until a better is found, and concisely restate the procedure. I can thus at least respond to the flood of inquiries, that I find it practically impossible to answer by personal letters, and also, in a small way, aid in the adoption of some practice of "Painless Dentistry."

To extract a tooth without shock or danger to the patient:

First. Only promise to make the operation easily endured.

Second. With cocaine locally applied and *locally retained*, anæsthetize the tissues surrounding it.

Third. While the cocaine is doing its obtunding work, give a systemic obtundent. If chloroform is chosen, administer it from an open, wide mouthed vial (as an ordinary morphine bottle), so gradually that the long, steady "smelling" of the patient from the bottle shall not cause coughing or catching for breath, and yet so steadily that the nerve fibrilla of the extremities shall soon respond.

Do not carry the patient beyond the point of consciousness, or volition to respond to your command, "Open your mouth and remain still."

An intelligent dentist can quickly and safely learn the "way" by himself as herein directed—smelling from the vial, and observing symptoms.

Ether, A. C. E., or gaseous oxide of nitrogen can be given with similar results. In the use of the latter, safety requires that sufficient atmospheric air should be given with the gas to prevent cyanosis, a plethora of the venous circulation and spasmodic muscular contraction. I am well aware that the admixture of air with gas for anæsthesia is against "authority," but it is a heresy (?) that will stand trial.

Since I have given any considerable study to cocaine and its uses in dental and surgical operations, I have become very much attached to the use of it in the form of "compound cocaine pigment." As a local anæsthetic, it is reliable, convenient and safe, both as a topical application and as a hypodermic. Its discutient force is surprising. Applied to "split-lip," "cold-sores" and boils, it is valuable beyond cost. In pericemental irritation, inflammation and ulceration, used with applicator or syringe, it is to me beyond price; applied with "paste" to devitalize pulps, if pressure is absent, there is entire freedom from pain.

Other preparations of cocaine, much simpler and more easily procured, can be as successfully used as a local anæsthetic, with or without chloroform inhalation; but in no case must it be used as a hypodermic or injection to the antrum, or extensive alveolar ulceration, nor yet into any medullary or telangiectatic tumors, unless combined with coagulants. The following formula will be found convenient and useful:

℞	Hyd. Chlor. Cocaine (coarse, clean crystals)	ʒii
	Oil Cassia	fl ʒiii
	Oil Caryophylli	fl ʒii
	Chloroform	fl ʒi
	Alcohol ad	fl ℥i

M.

Sig. Use with applicator as local anæsthetic.

What are the dangers to be avoided in the inhalation of chloroform? Space will permit only the briefest reply:

First. *Shock* to the nerves by a deluge of the narcotic on the large expanse of fibrillated nerves spread out in nose, throat, bronchia and lungs. Hence you read, "The patient had only taken four or five breaths, and sank back and died." Certainly, the highwayman does not need to give four or five blows on the victim's head with a sandbag; the shock of one blow may be fatal, yet no scull fracture or vessels ruptured follow.

Second. Drowning. If care has not been exercised against shock, the second danger is greatly enhanced; but in any case, the anæsthesia should not be pushed far enough to overcome the sentinels of life, the *ganglia* that control the respiration, heart-beat, peristole, etc., and to distinguish between the points of sentient nerve anæsthesia and ganglionic invasion, requires the closest, keenest discrimination.

I deem it extremely fortunate that in the use of chloroform for dental purposes no such discrimination is needed. The obtunding influence with cocaine is ample long before the danger line is reached. I insist that the toxic property of a drug in an overdose is no argument against its proper use.

OPERATIVE TECHNICS.

BY THOMAS E. WEEKS, D. D. S., MINNEAPOLIS, MINN.

CONTINUED FROM JUNE REVIEW, PAGE 435.

PREPARATION OF CAVITIES.

Cavities of decay which are found on the surfaces of all the teeth, are the result of two great predisposing causes; first, structural imperfections; second, prolonged contact of any surface with the results of fermentation, or with the secretions from diseased tissues. Structural imperfections result from imperfect coalescence of the enamel, usually at the point of union of the several developmental lobes; or from arrested development. Consequently they occur on surfaces where grooves are sharpest and deepest, or in those grooves which cross labial or lingual surfaces at right angles with the long axis of the tooth, indicating an arrest of development at some period in the growth of the tooth.

As the occlusal surfaces are usually kept clean by the act of mastication, and the greater portion of the labial or buccal and lingual surfaces are cleansed by the action of the tongue and lips, we naturally turn to the proximate surfaces, and to that portion of the labial and lingual surfaces next to the gums, to find cavities which are the result of the second cause. Although a satisfactory classification on this basis is difficult, separation into classes is necessary for purposes of study. We will classify according to the form and location of the cavity and the completed filling. Cavities upon all surfaces other than proximate are formed and filled under the same general rules. In cavities upon the proximate surfaces of incisors and cuspids, these rules are modified by the location and shape of the surface and the extent of the cavity. For similar reasons, cavities upon the proximate surfaces of bicuspids and molars are governed by rules peculiar to themselves. These facts form the basis for our classification:

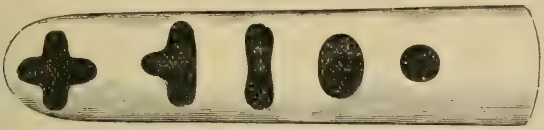
(Blackboard Diagram.)

Class 1.	All cavities on any surface other than proximate.	A. Cavities arising from structural imperfections in pits and fissures.
		B. Cavities on labial, buccal or lingual surfaces, caused by contact with secretions from diseased tissue, or the products of fermentation.

Class 2.	All cavities on the proximate surfaces of incisors and cuspids.	A. Cavities which do not involve the mesial or distal angle.
		B. Cavities which involve the restoration of the mesial or distal angle.
Class 3.	All cavities on the proximate surfaces of biscuspids and molars.	A. Cavities which include the marginal ridge, but do not involve any sulci or grooves upon the occlusal surface.
		B. Cavities which involve not only the marginal ridge, but also sulci or grooves upon the occlusal surface.

As fillings in cavities of the first class are upon either plane, slightly convex, or slightly concave surfaces they are simple inlays.

FIG 187



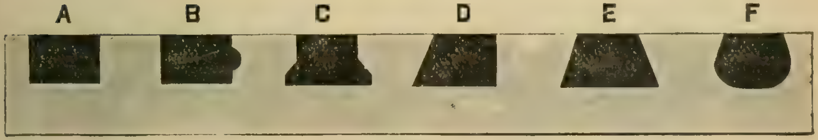


FIG. 188

Any surface which is to receive an inlay must have a recess for its reception; this recess must correspond in outline with the inlay, and may be called a mortise. Some of the forms of inlays for cavities of the first class are shown in Fig. 187. When the inlay is in one piece, as is necessary if it be made of glass or porcelain, the mortise should have parallel, perpendicular sides, Fig. 188, *a*. Such inlays are held in position by adhesion or by the perfection of their adaptation to the mortise. Where the inlay is introduced in pieces or sections, or in a plastic condition, the mortise is given retaining shape, *i. e.*, enlarged in some direction in its interior. There may be grooves on one or more sides, as in *b* and *c*, Fig. 188. These are grooved mortises. One or more of the sides may be sloped, joining the base at an acute angle; as in *d* and *e*, Fig. 188.

These are dovetailed mortises. For materials inserted while in a plastic condition, the mortise may be rounded in form, as in *f*, Fig. 188. If cavities in teeth were given any of the foregoing forms, except it might be that shown in *a*, Fig. 188, the structure of the enamel is such, that fracture or chipping of the enamel margins would occur when subjected to any force or strain. For this reason, the retaining shape, or dovetail of the mortise is made in the dentine, *a*, Fig. 189, and *a*, Fig. 190; the enamel is protected from fracture by beveling it, as in *b*, Fig. 189, and *b*, Fig. 190. For convenience the retaining shape in the dentine will be called the dentinal pyramid, *c*, Fig. 189, and *c*, Fig. 190, and the enamel bevel will be called the enamel pyramid, *d*, Fig. 189, and *d*, Fig. 190. In the

FIG. 190½

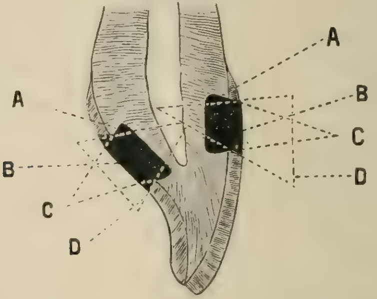


FIG-189

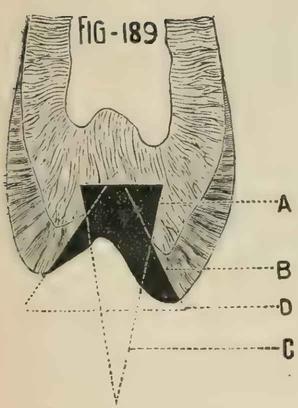
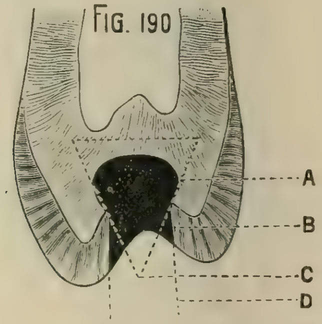
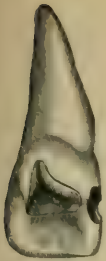


FIG. 190



These cuts are made from photomicrographic, 3 in. objective. In outline they are faithful reproductions. The structure is entirely diagrammatic. All the longitudinal sections shown, except Figs. 213 and 227, which are made from drawings, are made in the same way.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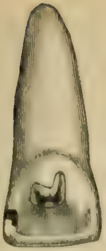
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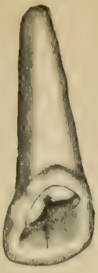
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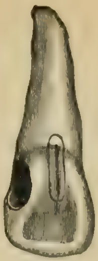
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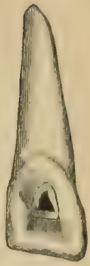
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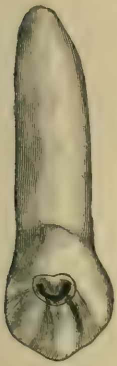
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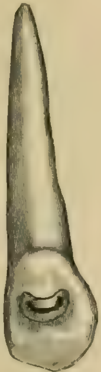
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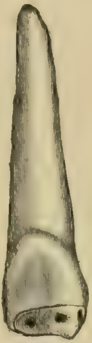
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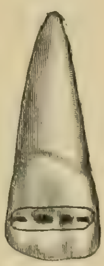
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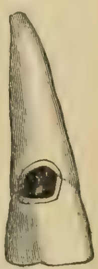
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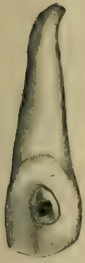
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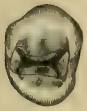
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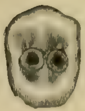
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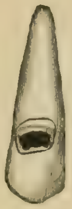
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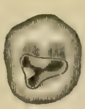
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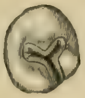
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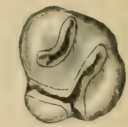
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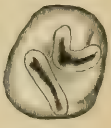
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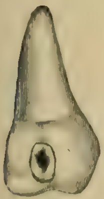
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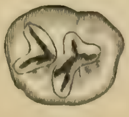
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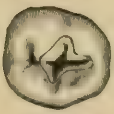
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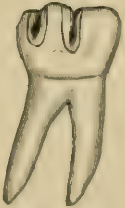
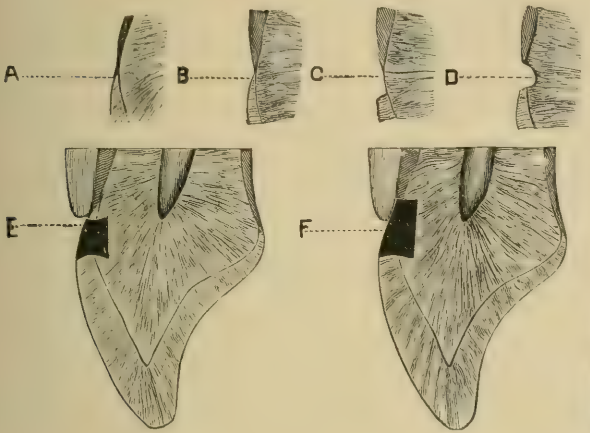

212

Cuts 191 to 212 inclusive, and 214 and 215, are made from photographs of natural teeth. They are accurate reproductions in outline, but they are enlarged about one and a half times. The unprepared cavities are shown as they appear in the teeth.

dentinal pyramid the amount of retaining shape, or angle of the sides of the pyramid with its base, depends upon the strain to which the inlay, or filling is to be subjected. The sharpness of bevel of the enamel depends upon the character of the material of which the inlay, or filling is composed; the form shown in *b*, Fig. 189, is practicable, if the material possesses ductility, tenacity, or edge strength, as gold; while the form shown in *b*, Fig. 190, is necessary if the material does not possess these qualities, as tin, amalgam, cement, or gutta-percha.

Taking the teeth in their numerical order, we find cavities of division *A*, class 1, upon the lingual surfaces of the upper incisors and cuspids, when there is a sharp groove at the base of the linguo-gingival ridge, or sharp grooves crossing this ridge, Figs. 191 to 197. Cavities in grooves or pits marking arrested development also occur upon these surfaces, in the middle or incisal third, Fig. 198. The labial surfaces of these teeth seldom have cavities arising from structural imperfections except in those pits and grooves which mark arrested development, Fig. 199. The lower incisors and cuspids seldom have cavities of division *A*, class 1. The labial surfaces of upper incisors and cuspids often have cavities, of division *B*, class 1, see Figs. 200 and 201. The lingual surfaces seldom have cavities of this division. The labial surfaces of lower incisors and cuspids sometimes show cavities of division *B*, class 1; the lingual surfaces almost never. On the occlusal surfaces of the upper bicuspids we find cavities in pits at the junction of grooves, and in fissures wherever grooves are sharp and deep, Figs. 202 and 203. The buccal and lingual surfaces of upper bicuspids rarely have grooves marking arrested development, but cavities of division *B*, class 1, occur on the buccal surfaces in the gingival third, Fig. 204; but seldom, if ever, on the lingual surfaces. Cavities of division *A*, class 1, occur occasionally on the occlusal surfaces of lower first bicuspids, and frequently on these surfaces of the lower second bicuspids, Figs. 205, and 206. The buccal surfaces of the lower bicuspids often have cavities of division *B*, class 1, in the gingival third; the lingual surfaces seldom, if ever.

The occlusal surfaces of upper molars have cavities of division *A*, class 1, at the junction of grooves and in deep grooves, Figs. 207, and 208. The buccal surfaces of the upper molars seldom show pits or fissures, except in poorly developed first molars, which sometimes result from an infantile sickness; but the lingual surfaces frequently have cavities in pits and fissures, especially when the disto-lingual groove of the buccal surface crosses over to the lingual surface, or when the lingual groove terminates in a pit, Fig. 209. The lower molars have cavities of division *A*, class 1, on the occlusal surfaces, under the same conditions as those noted for the upper molars, Figs. 210 and 211; the buccal surfaces have cavities of division *A*, class 1, in the buccal groove, and occasionally in the disto-buccal groove, Fig. 212. Cavities of division *B*, class 1, are found in the gingival third of the buccal surfaces of both upper and lower molars, but not upon the lingual surfaces, except in cases of recession of the gums. In fact, the buccal and lingual surfaces of all of the teeth, upper and lower, are liable to have cavities of division *A*, class 1, when the gums have receded sufficiently to expose the gingival line.



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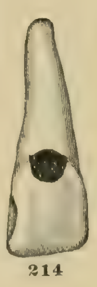

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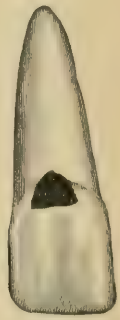

215

In cavities of division *A*, class 1, the general rule for cavity outline is, that *pits should be enlarged until sound walls are obtained, and fissures should be cut to the end, or until the fissure becomes a groove.** If gold or tin is used in filling, the walls of the cavity for the dentinal pyramid should be shaped as in *a*, Fig. 189, and *a*, Fig. 190½. For gold, the bevel for the enamel pyramid may be as great as in *b*, Fig. 189, if the location of the cavity makes it desirable. For tin, the enamel bevel should be as shown at *b*, Fig. 190, or *b*, Fig. 190½. If amalgam, cement, or gutta-percha, is the material employed, the dentinal pyramid may be shaped as in *a*, Fig. 190; while the enamel pyramid should have no more bevel than is shown in *b*, Fig. 190, or *b*, Fig. 190½.

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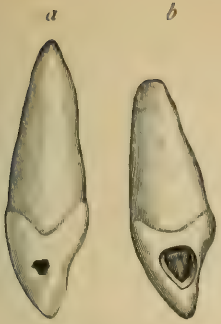
*Lines have been placed on all the cuts to indicate the outlines of the prepared cavities.

In cavities of division *B*, class 1, the cutting mesially, distally, and toward incisal portion, should be enough to insure sound walls, and true lines of beauty; cut rootward sufficiently to place the cervical margin beneath the free margin of the gum, Fig. 213, *f*. If this is not done, the result would be as is shown at *e*, Fig. 213. Where the free margin of the gum is long, it is not necessary to establish the cervical margin of the cavity in the cementum, as seen at *f*, Fig. 213. A short triangle of enamel, such as is shown at *e*, Fig. 213, should never be left. In rare instances, as in Fig. 201, it is not necessary to place the cervical margin of the cavity beneath the gum. The mesial and distal margins of these cavities should cross the line of the gum margin as nearly at right angles as possible, Fig. 214, in order that such triangular areas of enamel as are shown in Fig. 215, shall not be left. This class of cavities are especially annoying when there is a tendency to inflammation of the gingival border, or where there is recession of the gums. Normally, the enamel is slightly overlapped by the cementum, *a*, Fig. 213, but in many specimens this condition does not exist, *b*, Fig. 213. When from any cause such points are exposed by recession of the gums, such structural imperfections are a predisposing cause of decay, *d*, Fig. 213.

Cavities of the second class have two dentinal pyramids; one with its base rootward, *b*, Fig. 216, and *c*, Fig. 217; the other with its base toward the pulp, *a*, Fig. 218, *a*, Fig. 219, and *a*, Fig. 220. They have one enamel pyramid with its apex pulpward, *b*, Fig. 218, *b*, 219, and *d*, 220. As these cavities are on the proximate surfaces of the conical teeth, they have, when prepared, the pyramidal outline seen in Figs. 216, and 217. They seldom occur under good hygienic conditions, except there be broad contact, as in Fig. 221, or when the festoon of the gum is withdrawn from the interdental space. It is necessary to establish the cavity margins outside of the point of contact, with the cervical margin beneath the border of the gum.

In division *A*, class 2, cavities usually appear as in *a*, Fig. 216; when prepared, they should appear as in *b*. Fig. 216 ; the form of



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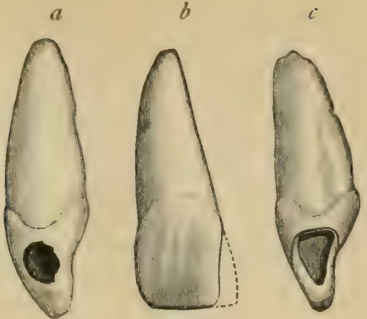
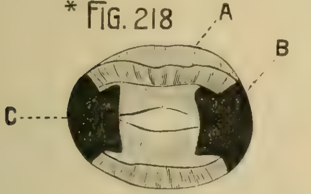


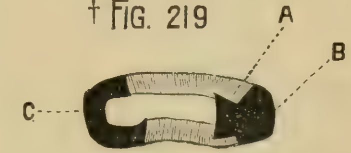
217

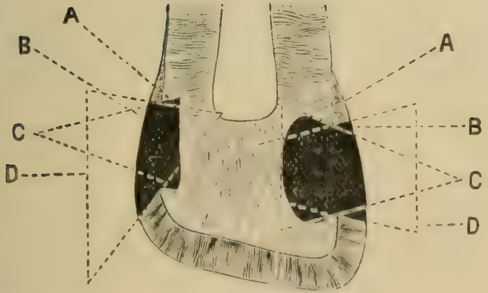
These cuts, as well as Figs. 223 to 226 are made from photographs of teeth having cavities as shown.

* FIG. 218

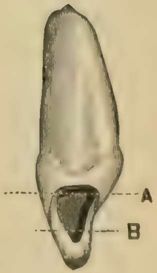


† FIG. 219





220

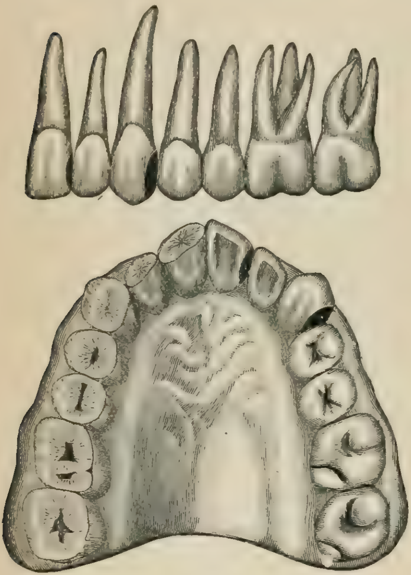


219½

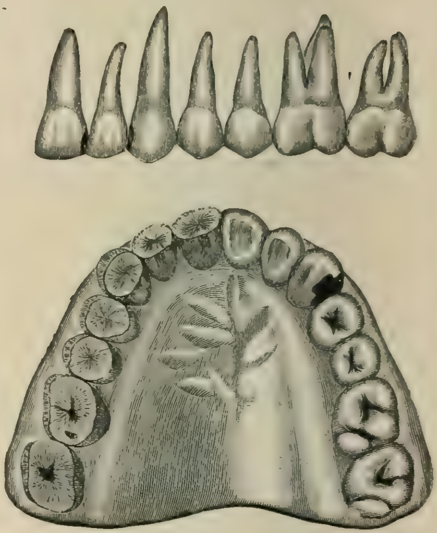
*This cut, in common with all the transverse sections shown, was made from a photograph of a section of a tooth, and is accurate in outline, structure diagrammatic. This section was cut from an incisor at *a*, Fig. 219½.

†This section was cut from an incisor at *b*, Fig. 219½

the dentinal and enamel pyramids is seen in Figs. 218, 219, and 220. The labial margin should not only be outside the point of contact, but should extend so far upon the labial surface, and have such outline as to prevent the gold from being in shadow; if in shadow, it appears as a dark line. The lingual margin should extend so far upon the lingual surface as to insure the cleansing of this margin by the action of the tongue. The occlusal margin should have such enamel bevel as will bring it outside the point of contact. These various points are illustrated in Figs. 221 and 222.



221



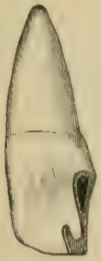
222

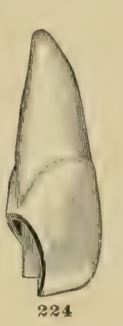
These cuts are reproductions of teaching charts by Dr. W. J. Brady. Fig. 222 shows ideal contact; Fig. 221 shows one of the many departures from the ideal.

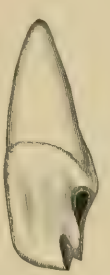
The line of demarcation between division *A* and division *B*, class 2, is a disputed point. Which cavities to leave in division *A*, and which to place in division *B*, by involving the mesial or the distal angle, must be left to the judgment of the operator. The chief factors are the strength of this angle after the decay is removed, the shape and structure of the tooth, and the manner of occlusion. The general outline of the prepared cavity, as seen in *c*, Fig. 217, is the same as that for division *A*, as seen in *b*, Fig.

216, except that more of the labial and lingual surfaces are sacrificed, *b*, Fig. 217, and the dentinal pyramid has more retaining shape. Having determined to involve the mesial or distal angle, enough tooth substance must be sacrificed to allow sufficient gold in the incisal portion of the filling to resist the strain of mastication ; and the cavity must have enough retaining shape to resist this strain. The usual form of cavity preparation is, in the main, as shown in Fig. 217, and in the outline illustrations, Figs. 218 and 219.

In those teeth which are long and thin, or where the occlusion is such that the teeth will in time become abraded, the form of preparation just described is open to objections. In the first instance, the form of the tooth makes it impossible to secure sufficient retaining shape in the incisal third. In the second instance such retaining shape is lost by the general abrasion. It is also difficult to fill that portion of the dentinal pyramid in the incisal third of a thin incisor. In these cases, an auxiliary dovetail may be cut upon the lingual surface, as in Fig. 223 ; or in addition to this, a tenon may be prepared to dovetail into the filling, as in *c*, Fig. 219. The tooth is cut off at the incisal third, and the enamel grooved, as in Figs. 224 and 225 ; also *c*, Fig. 219. The dentinal pyramid at the base of the filling, in the cervical third, is seen in *c*, Fig. 218.* A form of preparation for cavities in distal surfaces of upper cuspids, is that of cutting a dovetail on the lingual surface. Fig. 222.


223


224


225

Cavities of the third class, occurring upon somewhat broad

---

*These forms of preparation were suggested by Dr. I. C. St. John. See *Dental Cosmos*, Vol. XXXVI., p. 198.

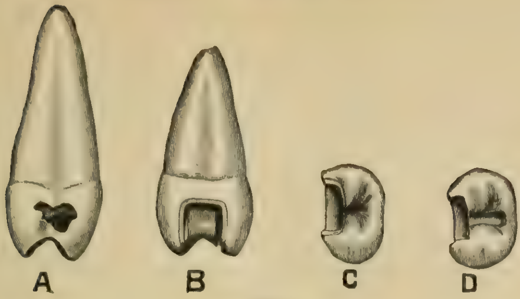
and flattened contact surfaces, are seldom confined to the proximate surfaces. They usually involve the mesio-marginal or disto-marginal ridge. Where the adjoining tooth has been extracted, these cavities, in many cases, may be filled without cutting through the ridge to the occlusal surface. In such cases, the rules for preparation are the same as for the preparation of a cavity upon any plane or slightly convex surface.

The usual form of preparation for cavities of division *A*, class 3, is shown in *b* and *c*, Fig. 226. There are two dentinal pyramids, one with its base rootward, *a*, Fig. 227; the other with its base pulpward, *a*, Fig. 228. The form of the teeth gives two enamel pyramids, one with its apex pulpward, *b*, Fig. 228, the other with its apex rootward, *b*, Fig. 227. In division *B*, class 3, a simple cavity in a sulcus or groove upon the occlusal surface is combined with the cavity seen in Fig. *b* and *c*, Fig. 226. This forms an auxiliary dovetail, which has the same pyramidal form in dentine and enamel as is given to cavities of division *A*, class 1. Care should be exercised that the points *e* and *f*, Fig. 229, should be the deepest, as this form gives a firm "seat" for the filling, enabling it the better to resist the strain brought upon it at *g*, and *h*, Fig. 229. The various points of preparation for cavities of class 3, are shown in Figs. 226 to 229.

Emphasis should be placed upon the necessity for flat bases to the dentinal pyramid, with the plane walls rising at a slightly acute angle with the base, in all classes of cavities where gold or tin is used; and upon the lattitude which may be permitted when plastics are employed. In the forming of the enamel pyramid, stress should be placed upon the fact that a broad bevel must not be made for any material but gold. All cavity outlines should be on true, smooth lines, *i. e.*, perfectly straight lines and true curves. Jagged outlines not only detract from the beauty of the operation, but increase the difficulty of condensing and finishing the filling. All enamel margins should be carefully smoothed, for the same reasons. All cavities should be prepared step by step: 1st, establish outline of cavity; 2d, remove decay; 3d, make retaining shape; 4th, bevel and finish enamel margins.

PRACTICAL EXERCISES.

The extreme difficulty of preparing typical cavities in dried teeth, makes it desirable to limit such cavity preparation in the



226

FIG. 227

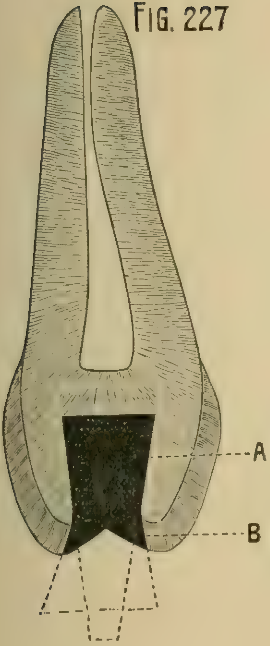


FIG. 228

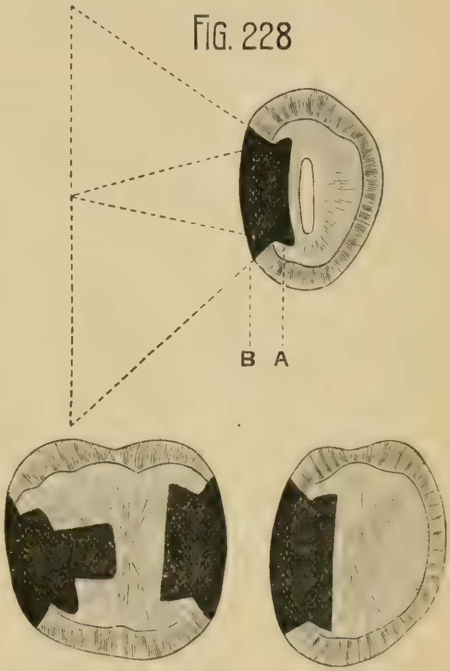
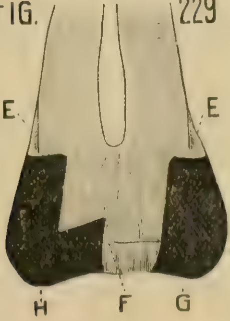


FIG. 229



This section gives a buccal view of an upper first bicuspid.

teeth mounted in the articulator. Only one cavity of each division of the several classes need be required. In order that the student may have the necessary practice in cavity preparation, some material should be chosen which can be cut more easily than the dry teeth. Dice, and toothbrush handles of bone are employed, but the coarseness of the grain in the bone, makes it difficult to get nice cavity margins. Experiments with celluloid have progressed so far as to indicate that this material may be so prepared as to meet the requirements. It may be easily moulded into tooth form, which will be a great advantage. Having selected *some* material, cavities should be prepared in it before attempting to prepare any in the teeth.

Exercise 1. Prepare on plane surfaces of bone or celluloid five cavities similar in outline to those shown in Fig. 187, having a depth of one-eighth inch, with plane walls rising from the plane floor of the cavity at slightly acute angles, as in *e*, Fig. 188. These cavities are designed for filling with tin. In the preparation of them, such chisels as Nos. 13, 15 and 20, and such excavators as Nos. 14, 44, 45, 46, 47 and 51, may be used. If cavities are desired for plastics, others may be prepared having similar outline and depth, with such shapes as that shown in *f*, Fig. 188. For such cavities the spoon excavators, Figs. 50, 51, 52, 65, 67 and 68, may be used.

Exercise 2. Prepare, for gold or tin, one cavity of division *A*, class 1, and one of division *B*, class 1, in some tooth in the articulator. One of each division may also be prepared for plastic filling. In this exercise, the same instruments may be used as in the first exercise, and the operation should be performed step by step as outlined.

Exercise 3. In the edge of the toothbrush handle, at the thin end, where it resembles the proximate surface of an incisor, or in incisor teeth of celluloid, prepare one cavity of division *A*, class 2, for tin, and one for plastics; also one for gold or tin, and one for plastics of division *B*, class 2.

Exercise 4. Prepare one cavity of division *A*, class 2, for tin, in one of the incisors in the articulator. Prepare one cavity of division *B*, class 2, for plastics, in another incisor in the articulator. Prepare one cavity, division *B*, class 1, in an incisor, cutting an auxiliary dovetail on the lingual surface. In these two exercises, the student may use, in addition to the instruments already employed, the burholder, Fig. 82, with burs of the proper size, shaped like Figs. 88, 94, 95, 96, and 97. These operations also should be performed step by step.

Exercise 5. In the square end of the toothbrush handle, or in a bicuspid or molar of celluloid, prepare one cavity for tin, and one for plastics, of division *A*, class 3. In the same material, prepare one cavity for tin and one for plastics of division *B*, class 3.

Exercise 6. In a bicuspid or molar, in the articulator, prepare for plastics, one cavity of division *A*, and one of division *B*, class 3. The instruments employed for the previous exercises are the ones to be used for these two, and the operation should be performed step by step as before.

When operating upon teeth in the articulator, it should be fixed by means of the bolt, so that the incisors are opened two inches. See Fig. 1, *A*. In all the exercises, the outlines of the cavities should be laid out symmetrically with true lines. Especial care should be observed that the margins of the cavity in the bone or celluloid, as well as in the teeth, are smooth, and the margins of enamel in the teeth are given the proper bevel. The same precautions should be observed against penetrating the pulp chamber as in clinical practice. If an exposure *is* made, this cavity should be prepared with a view to capping the pulp, as described in the next chapter. The teacher will find that the student understands the forms of cavity preparation much better if he prepares each cavity before them, in a collossal clay model, using enlarged instruments. If time and conveniences will permit, the students may themselves prepare cavities in clay teeth which they have modeled.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

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A CRITICISM, WITH SUGGESTIONS.

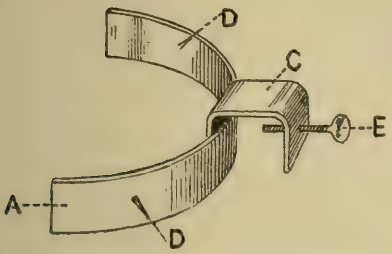
We quote below from an article in the January, 1894, number of the *International Medical Journal*, by J. D. Thomas, M. D., entitled, "A Case of Fracture of the Jaw." The fracture was triple, one break being at each angle, the other a compound fracture on a line with the mental foramen. Regarding the treatment the writer says:

> External splints could not be applied, owing to the serious injury to the soft parts, but even if they could have been utilized they would have been useless in this case. It was attempted to hold the fragments together by passing wire around the teeth; but this was of little service, as is usually the case. I then tried a strip of sheet lead, having given it the form of a trough and shaping it to conform to the teeth and alveolus. The fracture being adjusted and held in place, this trough was placed in position, and I attempted to 'pinch' it in at the interdental spaces, but this again was a failure. A dental surgeon was now called in, and he tried faithfully to get a correct impression of the teeth and jaw, but owing to the restlessness of the patient and the difficulty in holding the fragments in apposition a sufficient length of time, a satisfactory impression was not obtained. Failing with all of the above methods, I then had the instrument maker make the apparatus shown in Figs. 1 and 2.
>
> The splints were made of soft steel, so that they might be bent and thus adjusted to the contour of the surfaces to which they were to be applied. *A* is the inside splint; *B* the outside one. The clamp *C* was welded to the splint *A*, making one piece.
>
> This splint was placed behind and below the teeth over the alveolar process. The splint *B* was fitted in front and below the teeth over the process. The splint *A* was first applied, and by

taking hold of the clamp and drawing upon it the sharp pins *D* were sunk into the process and held until the splint *B* was adjusted; then the screw *E* was run down upon it, causing the pins of the splint to penetrate, when the parts were found to be held nicely in place. * * * * The pins were three-sixteenths of an inch in length and quite sharp. * * * * Although the patient died on the fifth day from shock and exhaustion, for the four days during which the instrument remained in position, the fracture was held firmly and correctly in place, and it appeared to serve the purpose for which it was intended most admirably.

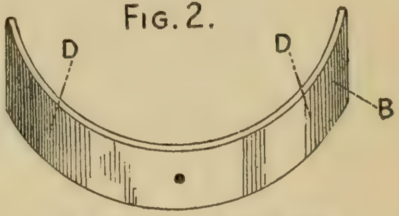
As observed, the surgeon tried two impracticable methods, one of tying the teeth across the anterior break, the other the application of a plate of lead, before he called to his aid the "dental surgeon," whose efforts failed because of reasons which will be noticed further on. The mechanical appliance finally employed was the result of the joint effort of the surgeon and the instrument maker. It was not such a splint as would recommend itself to the favor of an intelligent dentist but reflects some credit on the instrument maker as it held the fragments securely in place until the patient died. The criticism of the appliance which we would offer is that it is uncleanly, cumbersome, does not conform to the teeth and depends upon two steel pins which penetrate the gum and bone on the lingual aspect of the jaw for its retention in the mouth. Metallic or other pins used for such a purpose must of necessity cause more or less irritation and unnecessary pain, and probably be the cause of inflammation which would render the prognosis of the case less favorable.

FIG. I.



A, inside splint; C, clamp welded to A; D, sharp pins; E, screw.

FIG. 2.



B, outside splint; D, sharp pins.

We do not wish to criticise too severely the attempts of the surgeon, as most surgeons do not profess to be expert operators in the mouth, but that the dentist had to take second place to the instrument maker in the construction of a splint is humiliating. Evidently he does not read dental literature, he has not kept up with the teaching of the day, and is among those who bring reproach on the profession.

He should not have failed to secure an impression because the patient was restless, and because he could not hold the fragments in place while the impression was being made.

Years ago very definite instruction was given the profession regarding the securing of impressions in the treatment of fractured jaws. In this case as the fragments would not remain in place when the fracture was reduced, it was a great waste of time and inconvenience to the patient, to attempt to hold them in position while taking an impression. If a splint was contemplated the "dental surgeon" should have taken an impression of the teeth and the fragments of the jaw in their out of place condition; then from this impression he should have secured a plaster cast and, have separated it on a line with the anterior fracture. The teeth of these two parts of the cast, should then have been articulated with the teeth of a cast secured from an impression made from the upper jaw. The two parts of the cast of lower jaw should then have been secured to each other by the addition of a little soft plaster. On this reconstructed cast a suitable splint could easily have been formed.

But for the case in hand, a simpler and better treatment, which would dispense with all appliances, could have been found in the writer's method, which is: Adjust wires to the cervical portion of a sufficient number of the teeth of each fragment, also to the corresponding teeth of the upper jaw, drawing them to fit the teeth closely by tightly twisting their ends together. These wires should have a length of not less than six inches. When a sufficient number of wires are placed about the teeth of each jaw, the fracture is reduced and the wires of the lower secured to those of the upper teeth, holding the parts securely in their normal position. A possible objection to this method of treatment is the danger in case of emesis, but this is slight, a few hours after the accident; beside, the attendant can be supplied with a strong pair of scissors, and in case of need the wires may be cut. There is another simple method which could have been used in this case had the aid of a skillful dentist been employed—to reproduce from the reconstructed plaster cast, a cast from Mellotte's metal. Upon this swage a plate of gold, silver, or German silver, covering a sufficient number of teeth on each side of the fracture. The metal should extend down on the buccal or labial and lingual sides of the teeth, two-thirds of their length, then with oxy-phosphate of zinc, cement it to the teeth. This gives a splint that is cleanly, strong and takes up but little room in the mouth. T. L. G.

The Semicentennial of the Discovery of Anæsthesia.

A movement is on foot to celebrate the discovery of anæsthesia during the present year—this being the semicentennial. Every dentist should be concerned to keep fresh the memory of those most instrumental in its introduction, for undoubtedly to dentistry belongs the main credit of discovery. Several influential Eastern dental societies have already taken action in the matter, and the profession should unite from one end of the land to the other to make the occasion memorable.

Dr. W. C. Barrett, editor of the *Dental Practitioner and Advertiser*, is chairman of the committee of the New York State Dental Society, and will be glad to receive communications from other like committees.

DOMESTIC CORRESPONDENCE.

New York Letter.

New York, June, 1894.

To the Editor of the Dental Review:

These fine days suggest to us the prodigality of nature. Living as we do on the border of Central Park, breathing in, more often than otherwise unconsciously, the perfume of millions of shrubs brought from every clime, and yet out of all this prodigality of life there is no discord. All these growths silently vie with each other not to outdo its neighbor, but in honor preferring one another. There is no incongruity in form, color or order. Truly nature betokens its love for this boundless variety and pours its incense of praise on finite man. In all this no struggle, no noise, no envy. How contradictory is the career of mankind to all this. How we jostle against foreign innovations. How little we spend our leisure moments patting the backs of our forefathers, unless it be under the inspiration of a $15.00 dinner at Delmonico's or Kinsley's; and the next day the politician, under the reaction of too much stimulation, casts his vote and tells the Chinaman to get out, and says in a fretful breath, "The only good Injun is a dead one." Our country has a big lesson before it, but will only learn it by intense suffering and discipline.

We have been taking our morning outing among the luxury of flowers that fills us in every pore with tingling stimulation, and it awakens our larger thought of the purpose of man. Gratefully we acknowledge it and turn our footsteps into the paths of obedience. This has already brought stillness, and rest, and life; and in this way we propose to fill up our latter days in looking at things as they are, and as they must necessarily be, because most men will follow their *own* will. This is our month. On the 30th day of June, 1831, we commenced this battle of life—we joined the (Infant)-ry. The first battle we recollect, was with our first teeth; they ached, and our father took us to the old family doctor that rode in the gig. We admired him as he coaxed us to a seat beside him, but, in his office in sight of the turnkey with the red silk bandanna wound about it (this kerchief was in daily use for both toilet purposes and professional) we fought against it and defeated father and went home with the aching molar in our jaw. But how soon was the victory turned upon us by our resolute mother who trotted us back in double quick step, and out came the temporary tooth, roots all absorbed, and it did not hurt us a bit. "What a splendid boy," says the dear doctor. How cheap—only 12½ cents for the "job." Just think of it. Modern dentistry has $15.00 an hour (and without gas). It costs more to save teeth than it does to "pull" them.

Nearly forty-two of all these years in the practice of looking down the mouth has made us thoughtful. Thirty years we have been in intimate association with the genius of our calling, our Atkinson. These fine June days recall the miles we have traveled with him in attending meetings, principally in this month, in New England. This was before societies published in their calls: "Members of Societies *only*, admitted." Who set this example? A few New York men started out one day and said on their cards of invitation "*None* admitted without cards." Through good and ill report they have returned, almost to Jeffersonian simplicity. They do not put a man out if he gets in without an invitation. There is only one man who feels called upon to bring an outsider to order if he tries to contribute his mite. Now just think of one, only one, society, excluding all but members of other societies in all this land of our free America. Our forefathers came not in a June flower, but in a May flower, to escape such monstrous edicts of restricted freedom. Is this to be the coming style of legislation?—none but saints admitted—plenty of room in the rescue missions. What would Atkinson say? We think he would say, "I prefer to remain where I am and profit by my mistakes made while down in the old world."

We challenge any man to produce a supporter to this view that is an intelligent practitioner in the true sense and meaning of intelligence.

> "My country 'tis of thee,
> Sweet land of Liberty."

When they get to doing things this way "out West," we think the Moon will soon turn into blood and the Sun be darkened. Who are to be the coming men? We propose to be asking this question during the summer months and if we can get any light, we shall not put it under a bushel. In the meantime we give out this thought: We are to have more men engaged in special labor, telling what they *know*, and *knowing* what they tell. We will then get less meaningless rabble and our journals will become far more instructive, and there will not be so much hard work for editors. This will be in line of our thought next year. The plan is to select men who are supposed to be qualified to write the history, or literature of a subject, its etiology and its practical dealing or treatment. All these men to employ the whole year in preparation. Certainly we think such labor ought to bring out knowledge. Let us hope so. Dr. Ottolengui is the author of this plan. This is special work. We would add that a literary editor of the society should obliterate from the discussions all irrelevent matter (such as mutual admiration, &c., &c., ad nauseam.) Some such improvements will make "our societies more satisfactory."

Every year New York is hastening away earlier. Beginning in May the ocean steamers go out with full lists, including mainly the people of leisure, more strictly speaking the fashionables, and we also find the commoners doing likewise, *i. e.* putting down the shades, and neglecting the doorplate. These are a few of the little indications that we are out of town. Dentists really do not leave before July. Some do not leave at all. They go outside and come into town day by day, and get a good deal of outing by their daily trips. New York is increasing in its attractions for summer tourists and when we get the Ferris Wheel—whew!—Chicago must let up now and give the East a chance. Yes we have got Hagenback and his wonderful trained animals. Manhattan Beach has secured them. We are grateful, for if it had not been for the Columbian Fair we could not have these diversions. What a big thing that Fair was, and the Dental Congress too. Who will be remembered in the 23d century? What a nice time some of the progeny of that age will have in "Looking Backward."

For the benefit of those that are anticipating Dr. Farrar's latest and greatest book, we may say it is on the stocks and will be launched when finished. The Doctor has put himself fully into this final work.

New York societies have adjourned till autumn. Gray matter runs low with the mercury at 99°. In October, look out for activity. With Victor Hugo Jackson in the chair of the first district, and the "Illustrated New Era in Dental Practice," we hope that stagnation will be unknown.

Where some practitioners summer: Bogue has a farmhouse at Mont Clair, N. J.; George Allen, Orange, N. J.; Carr and Bödecker, at Carrville, L. I. (It is said that they have realized a quarter of a million on their venture.) Bödecker keeps a pair of saddle horses so he and the madam are in the open air the year round. Sensible. Northrup has a farm at Ridgefield, Conn., his native town, but he is off for Europe now. Dr. Northrup was a consumptive not many years ago, but the saddle has made him a stalwart. Chas. E. Francis, the professor of juvenile dentistry in the Buffalo University, has a beautiful farmhouse at Stamford, Conn. He, too, was a consumptive, and took to the saddle both wet and dry. Now he will turn the scales at 200. He frequently entertains the Odontologicals in the spring months and does it royally. He was the inception of their society, and it has always been the apple of his eye. Dr. Clowes, the veteran in amalgam, goes daily to Hempstead, L. I., during the heated term. He is such an enthusiast he hardly finds time for fun. He occupies his $100,000 mansion, six hours daily, opposite the Vanderbilts, 667 Fifth Avenue. He is in full practice, and takes joyfully his $1,000 fees. Although white haired as snow he is as youthful as a boy. Nothing like amalgam in his sight. Be patient, some day he will publish some models of his "Oral Gardening" that will speak for themselves. Benjamin Lord summers at Guilford, Conn., by the Sound of Long Island. Iron gray and a marvelous thick heavy head of hair, yet one of our oldest practitioners. Prof. Littig, of the New York Dental College, summers at a hotel in Boston Harbor, in which he has a financial interest. A. H. Brockway, President of the Odontological, pays an annual visit to his native place, Syracuse, N. Y. He was a student of Westcott's.

No more, with mercury at 99°. QUID NUNC.

P. S. For our letter in the August number of the REVIEW, we propose to extend our observations, and give an account of a trip in a balloon, and what we saw and heard in the air. We have marveled how much better one sees and hears in the high altitude compared with the low. Q. N.

THE CONVERSION OF DR. GREENE.

CHICAGO, July 7th, 1894.

To the Editor of the Dental Review:

Items of Interest, July, page 393, tells of it. "Exhausting mental effort" and "great expense." After reading of the "Conversion" from first to finis, the author of "Com. Cocaine Pigment" thought it was meant to be facetious. But writers of witticisms seldom venture in that line till thoroughly equipped by education.

The tangle of grammer following Dr. G.'s ℞ in Latin (?) and English, and the construction of the first two paragraphs of the narrative, the lack of brevity ("soul of wit") in the whole, refute such a conclusion. It must be a joke. Provincialism, bad grammar and even coarseness may be excused sufficiently to find place in such an æsthetic journal as the *Items* if the joke has a point. Said joke was doubtless aimed at the author of the pigment. He would enjoy it as well as any one else if he knew where the "laugh" should come in.

What does Dr. Greene mean by "long prescription"? Which way does he measure? Where is the point of his numerous diseases? The pigment as published in the REVIEW was for one purpose only, and contained six drugs and the excipient glycerine. Perhaps "exhausting experimentation" might abbreviate without impairment.

What does the doctor mean by new remedies? Which of the ingredients are new? And which difficult to obtain? "New," "difficult," etc. That is the point of the joke.

To the young babe its mother's breast is new and its sustenance hard to obtain. To the lad just from the country, a city is full of the new. It may be that to Dr. Greene, of Trenton, Mo., the ingredients of the compound are new, and perhaps, too, he buys goods in St. Louis.

If the doctor will read the REVIEW without "Exhausting mental effort" he may learn that what to him is new, is to the educated old, and if he will send to Chicago he will as easily obtain said "new" drugs, as he can his dried sausage and smoked bacon.

A. C. HEWETT.

NEW ORLEANS, June 25, 1894.

Editor Dental Review:

Dear Sir: Your editorial in the June REVIEW is certainly very well in the main, but the "business principles" which you therein suggest are everything but the *principles* used in successful *business* transactions.

You say "patients should be made to realize that the dentist conducts his practice upon business principles," and I fully agree with you there, and what is more, that idea is carried out in practice. The question then becomes, what are the usual "business principles" here referred to? Let us cite a case in everyday practice: A gentleman appears and introduces his wife and several children. An examination of "all hands" or rather "mouths" discloses the requirement of considerable attention by each of the six. In anything like a full practice, this work would not in the ordinary course of events be completed within several months, perhaps three, perhaps six. Now, what do *real, genuine* business principles call for in this transaction? The presentation of a bill for the services rendered after all is completed? No, indeed! They require that at the end of each month a bill be rendered for the services given up to that time, and what is more true *business principles* require that bill to be paid during the early part of the following month. That is business, and if there is any doubt about it in your mind, just look at the bills you yourself receive from your dry goods merchant, your grocer, or any other business people with whom you deal.

Now are there any valid objections to rendering the bill at the end of the month, for work completed during that time? None whatever that I can discern. If the patient be a wealthy man it is a matter of perfect indifference to him when he makes his payments, and upon the other hand, if he is in moderate circumstances, it is very much easier for him to settle such an account in small payments, than to pay all at once. I am speaking from actual personal experience. For about thirteen years I followed the usual custom of sending in bills to certain families once or twice a year, and to all others only when the work was completed; and at the end of that time I was amazed to find to what a large sum my losses had footed up. Resolving then to make a radical change and to come down to "business principles," on the first of the next January the following card was sent out with a bill for every standing account:

"*From and after this date my practice will be conducted upon the usual business principles, which require monthly settlements of all accounts.*"

And my appointment cards from that date bore the legend:

"*Monthly bills will be rendered, prompt payment of which is expected.*"

It may well be imagined that this raised quite a commotion in *some quarters*, but now after nearly three years of this manner of conducting my practice, I would under no consideration return to my former methods. I find that I hardly lose $5 now (for loss there must be) where $100 went a glimmering in those "good (for the dead beats) old days of yore." As a matter of fact, if a man proposes to pay his dental bill he cannot object to doing so in this manner. It is only those who intend *not paying at all* who complain.

If you do not believe all this, try it yourself and be convinced.

Respectfully,

C. Edmund Kells, Jr.

CHICAGO, July 6, 1894.

To the Editor of the Dental Review:

On page 444 of the June number of the REVIEW, I see the following item:

> "In the article of Dr. Ottofy on page 322 of the May number of the REVIEW occurs the following: 'Force from the plugger point will be expended in the direction in which it has been given its impetus and none other, the law of physics governs that point beyond the intervention of any theory of ours.' For the information of some that are interested, will the doctor kindly give the law that governs in this case." "R."

The statement is so simple and self-evident, and the law referred to so well known, that it did not occur to me necessary to cite the authorities or burden your pages with the republication of Newton's Laws of Motion, which may be found in almost any elementary work on natural philosophy or physics. For the information of "R," and some that are interested, I append a list of authorities:

Anthony & Brackett, Text-book of Physics, fifth edition, pp. 27, 28.

G. P. Quackenbos, Natural Philosophy, 1860, p. 37.

S. A. Norton, Natural Philosophy, p. 55.

Ganot's Elements de Physique, 1890, p. 14.

A. Privat Deschanel, Natural Philosophy, tenth edition. See rules governing the Translation of Bodies, pp. 3, 5, 41, 44.

Newton's Laws of Motion, see Law II., in any text-book on physics.

LOUIS OTTOFY.

STATE DENTAL BOARDS AND DENTAL DIPLOMAS.

To the Editor of the Dental Review:

All States that have dental laws must needs have State Dental Examining Boards. These are usually appointed by the State executives.

Their duties call for the enforcement of the dental laws of their respective States, and these laws have but a single, fundamental principle, and that is the preventing of the incompetent, unskilled, dishonest and disreputable persons from entering the practice of dentistry. The powers of these boards are two-fold, viz., mandatory and ministerial. In the former case but one interpretation can be put upon the course they are to pursue. In the latter, however, a different condition exists, and their acts may be discretionary. In most cases the law contemplates that they shall recognize a diploma issued by a legally recognized dental college, and that they shall issue a license on this without an examination. Here arises a source of trouble, as there have been cases where this has been refused, and a test case is now before the courts, to see whether a State board can exercise this authority or not.

There is no real ground for a clash between these functionaries, as the one is simply supplemental to the other. Their objects are much the same, yet they differ widely in reaching the end sought. College faculties assume the role of teachers and when they have fulfilled this office, granted their pupil a diploma, and sent him forth into the arena of actual practice, their work is done, and their responsibility ended. The bearer of their credentials has it for all time, and if obtained honorably, it is nonrevocable. These credentials are based upon the knowledge the holder possesses, together with a moral character, and a record of an honorable standing. While he may not lose the former, the two latter qualities are often sacrificed, and when they are, who shall say that it is not a wise step to debar him from practice? Who may do this, if not a State dental board? It may not be law, but it is equity. It may not be the rule, but it is certainly justice. It may not be enforced, but it certainly should be. Let it be understood then that State boards are not antagonistic to dental colleges or dental diplomas. That they are not constituted to interfere with the one, or question the solidity of the other, save when the former does poor work, and the holder of the latter proves himself unworthy. In these cases let them put the stamp of their disapproval on one, or both, and in the latter case, debar the holder from practice, by refusing him a license. If the standard of dentistry is to be raised, these bodies must not come in conflict, but must work in harmony. These thoughts have been called out by recent events that have occurred in a western State, and by the action taken by the Dental Examining Board of that State. In justice to themselves and the people of their commonwealth, they were compelled to revoke the licenses of three graduates of a reputable dental college, for "grossly unprofessional and disreputable conduct," and then informed the National Association of Dental Faculties of their action.

Now let us see what will come of it. It is high time that an example were set in this direction. The West is not the dumping ground for every incompetent, dishonest, and disreputable practitioner who may choose to occupy this field. It is high time that these were shut out, and it remains the work of the State boards alone to do it. The words of a recent graduate of a reputable college, viz. : "The dental chair of to-day must be one not only of physical comfort, as far as possible, but of moral safety as well," is the keynote to the whole situation. If dental college faculties and State dental boards will work in unison with these ends in view, it were better for both, and the profession as well.

By a Member of a State Board.

REVIEWS AND ABSTRACTS.

A Treatise on Pyorrhœa Alveolaris. A System for Its Prompt, Positive and Permanent Cure. By Junius E. Cravens, D. D. S. Pp. 48. Cloth. W. M. Herriott, Publisher, Indianapolis, Ind. 1894.

The statement contained in the latter part of the title of this little work sounds refreshing in view of the lamentable wail that has so long gone up from the profession regarding the hopelessness of attempting a permanent cure in pyorrhœa. Then again the reader is brought up with something of a start when he reads the concluding sentences to Chapter III. "*Absolute success must attend every case, and this is possible;* no partial success can be awarded any credit whatever—that has been the stopping place for a hundred years. *Partial success is only modified failure in treating pyorrhœa alveolaris.*"

What do our dubious brethren think of this? Conservative men in the profession will scarcely be found accepting off hand such teaching, even when emphasized with the author's italics, and yet we venture to suggest that this kind of teaching—extreme though it certainly seems—is infinitely preferable to the despairing pessimism that has fallen like a pall over a goodly number of the profession whenever this subject of pyorrhœa alveolaris has been broached. Dentists have not been doing their whole duty to the public in an honest effort to combat, as best they may, the ravages of this disease. They have too often told their patients that the disease was incurable, and that it was useless to make the attempt. As the result of this attitude thousands of teeth have been lost that might have been saved, and in view of these facts we heartily commend the present treatise to the consideration of the reader. Not because we share in full the calm optimism of the author, not because we think he has here said the final word about pyorrhœa, but because his ideas as set forth cannot fail of a stimulating effect upon those who read carefully what he has written, and because a word of encouragement is much needed at this time to induce men to take up vigorously the question of how best to manage this disease.

MEMORANDA.

Old Point Comfort, August 7.

An appreciative sketch of Dr. Rodrigues Ottolengui and his literary work is given in the July issue of *The Writer*, Boston, Mass.

The Wisconsin State Dental Society convenes at Janesville, Wis., Tuesday, July 17, continuing to the 20th. An interesting session is expected.

Members of the American Dental Association who wish to present anything of interest that would properly come in section three—operative dentistry—will please communicate at once with the chairman of the section.

A. W. McCandless.

1205 Champlain Building, Chicago, Ill.

A NEW TITLE.

It is now A. W. Harlan, M. D., D. D. S., M. A , the latter title having been conferred recently by Dartmouth College. We extend to Dr. Harlan our heartiest congratulations on this added recognition of his attainments. Such events as this bring credit to the profession and honor to the individual.

ALUMNI ASSOCIATION C. C. D. S.

At the annual meeting of the Alumni Association of the Chicago College of Dental Surgery held April 30, it was decided by the association to publish a paper known as the *Alumni News* of the Chicago College of Dental Surgery, which will be issued quarterly. The first copy will be out about the latter part of July. Dr. W. T. Reeves has been appointed publisher, and Dr. Geo. E. Zinn, Editor. It was also decided to hold association meetings quarterly instead of yearly as heretofore. The following officers were elected: President, Don M. Gallie; First Vice President, Geo. N. West; Second Vice President, L. Wilson; Third Vice President, R. B. Tuller; Fourth Vice President, W. T. Reeves; Secretary Treasurer, U. G. Poyer; Executive Committee: Geo. E. Zinn, W. T. Reeves, T. E. Powell; Board of Counsellors: A. H. Peck, C. E. Bentley.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The Eleventh Annual Meeting of the Association will be held at Old Point Comfort, Va. Place of meeting: In the Hygiea Hotel. Time and date, 10 o'clock A. M., August 4, 1894.

This arrangement is designed to afford two day and night sessions in view of endeavoring to complete the work of the Faculties represented before the convening of the other national bodies to meet on Tuesday following.

By order of the Executive Committee.

J. TAFT,
FRANK ABBOTT,
A. O. HUNT.

JUNIUS E. CRAVENS,
Secretary.

AMERICAN DENTAL ASSOCIATION.

The thirty-fourth annual session of the American Dental Association will be held at Old Point Comfort, commencing at 10 A. M., Tuesday, August 7, 1894.

GEO. H. CUSHING, Recording Secretary.

Arrangements are under way, but have not yet been completed, for a reduction in railroad fare. We expect a reduction of one and one-third for the round trip on the "certificate plan." In order to get this reduction, full fare must be paid in going to the meeting, and a receipt taken therefor from the ticket agent at the starting point. This receipt (certificate) must be countersigned by the Secretary of the association at the meeting, and will enable the holder to return for one-third fare, provided one hundred certificates are presented, showing that at least that number have paid full fare on the various railroad lines entering the place where the meeting is held. A circular giving full particulars will be mailed later to all members and to those who apply for information.

J. N. CROUSE, Chairman Executive Committee.
2231 Prairie Avenue, Chicago, Ill.

PRESENTATION OF MEDALLION LIKENESS OF DR. ALLPORT.

A bronze medallion likeness of the late Dr. W. W. Allport was presented to the Northwestern University Dental School by Dr. N. S. Davis in behalf of the family of the deceased, April 24, 1894. in the following address:

To the dean and faculty of the Northwestern University Dental School:

GENTLEMEN—It affords me much pleasure to present the school you represent with the valuable and well-executed work of art that stands before us. By removing the veil that has hitherto shielded it from our view, both you and the large audience here assembled will at once recognize it as an excellent bronze medallion likeness of the late Dr. Walter Webb Allport, so long known as the leading member of the dental profession of this city and State. It is a most appropriate and free gift from the family of the deceased, for whom I have been requested to speak on this occasion.

Dr. Allport was born in Lorain, Jefferson County, N. Y., in June, 1824. At the age of twenty years he commenced the study of medicine in the office of Dr. Amasa Trowbridge, at Watertown, N. Y., who was then an eminent surgeon of that State. Two years later, 1846, he turned his attention wholly to the study and practice of dentistry. He graduated from the New York Dental College in 1853, and moved with his wife to Chicago in 1854. Though first commencing his professional work in a very small room on Lake street, his industry, skill and rare business qualities soon advanced him to a lucrative practice and an enviable social position. Not content with merely a good professional income and social standing, Dr. Allport was from a very early period an earnest advocate of the organization and advancement of his profession. Only four years after his arrival in Chicago he was elected President of the Western Dental Society. In 1860 he was the first Chairman of the American Dental Association, and its President again in 1886. In 1881 he was awarded the honorary degree of Doctor of Medicine by Rush Medical College, and soon after became a regular member of the Chicago Medical Society. The same year he was one of the delegates from that society in attendance on the annual meeting of the American Medical Association at Richmond, Va. It was during that meeting, largely through his influence, that dentistry was formally recognized as a legitimate part of the general field of medicine and surgery by the creation of a section on dental and oral surgery. He was enabled to accomplish this through the aid of Drs. S. D. Gross, L. A. Sayre and a few others. He also took a leading part in organizing and rendering highly successful the dental section of the Ninth International Medical Congress, held in Washington, D. C., 1887. He was editor of the *People's Dental Journal* for two years, and the author of several valuable contributions to the literature of his profession, as well as of several improvements in dental practice. Having spent the first two years of his professional study in the office of an eminent physician and surgeon, it was only natural that he should early comprehend the fact that dental and oral surgery is as legitimately a department of the field of general surgery as ophthalmology, otology, or gynæcology. It was this that made him an earnest, consistent and able advocate of a broader and more thorough education for practitioners of the dental art. It was to reach practical results in this direction that he took an active and leading part in organizing the dental school you now represent under the auspices of the Northwestern University, and in such relation to its medical school that its students should have the same thorough training in all the fundamental branches of medicine as the students of the medical school, and in the same laboratories. Therefore, as this medallion strikingly represents one of the chief founders of your excellent and prosperous dental school, I trust you will accept it, and place it in such position that it will not only perpetuate the memory of Dr. Walter Webb Allport, but will also be a perpetual incentive to higher attainments on the part of all who enter the portals of your school.

RESPONSE IN BEHALF OF THE FACULTY, BY DR. GEO. H. CUSHING.

Mr. President:

I am requested by the faculty of the Dental School of the Northwestern University, to extend to the heirs of Dr. Allport, the assurance of the grateful acceptance of so fitting a memorial of one who, through his superior skill and attainments, had justly reached so high a position in his profession.

But, Mr. President, this medallion will have a higher significance and value as reminding us of one who was among the first to recognize the importance of a more thorough training for the dentist, and who was always most earnest in endeavoring to elevate the standard of professional education.

It would seem eminently appropriate then, that such a reminder should hang on the walls of this institution, in the founding of which he took so great an interest, and in which institution we expect to do our full share toward bringing about the realization of the hopes which he in common with ourselves entertained in this direction.

Again, Mr. President, in behalf of the faculty, I would express its appreciation of, and thanks for this beautiful gift.

OBITUARY.

DR. C. P. SOUTHWELL.

Dr. C. P. Southwell, of Milwaukee, Wis., died June 5, 1894, at the age of sixty-three. Dr. Southwell was a member of the American Dental Association for many years and since 1879 was connected with the Wisconsin State Dental Society, being President of the organization in 1890. He had been in active practice since 1865. He leaves two sons, (who are dentists in Milwaukee,) and a wife, to mourn his departure. Valvular disease of the heart was the cause of his demise.

DR. GRAHAM A. WELLS DEAD.—ONE OF THE OLDEST DENTISTS IN THE CITY.—HIS CAREER.

Dr. Graham A. Wells, the oldest dentist in this city, with one exception, died at his residence, No. 181 North New Jersey Street, at an early hour this morning. He had been suffering from valvular disease of the heart for nearly two years, and had spent the winter in Texas, returning home last month. He was born in Red Creek, N. Y., and studied his profession in Rochester and New York City. He came here in 1856, locating above Harrison's Bank, on Washington Street, which office he retained until failing health last year compelled his retirement from business. Dr. Wells was eminent in his profession, being skilled in all its branches, and was successful in his whole practice. He was a devoted member of the Second Presbyterian church, and, as a citizen, was respected by all who knew him. His earnest, kindly, but quiet manner attracted to him a large circle of friends, by whom his loss will be sincerely mourned. He was married to Georgiana Elkin in 1860, who lived but a short time, and in September, 1864, he married Amelia H. Smith, of Cincinnati, who mourns him. The funeral will take place on Wednesday morning at 9 o'clock, and the burial will be at Spring Grove, Cincinnati.—*Indianapolis News.*

THE

DENTAL REVIEW.

VOL. VIII. CHICAGO, AUGUST, 15, 1894. No. 8

ORIGINAL COMMUNICATIONS.

THIRTY YEARS AGO AND NOW.*

ANNUAL ADDRESS BY THE PRESIDENT, GARRETT NEWKIRK, M. D., CHICAGO.

Members of the Illinois State Dental Society:

A visit to Springfield always appeals to my patriotic feelings, and I love to come here. It is the capitol city of our State. It was the home of Abraham Lincoln. On a green hill not far away is now his tomb, where "guarded by heroic bronze" our martyred hero lies.

Next to Mt. Vernon it is the Mecca of American patriotism; and I think this feeling in our hearts is one of the causes bringing us here each second year.

This has been announced as our thirtieth annual meeting, and I dare say many of you have the same impression which I had at first, that the society is now thirty years old. But I have learned that the count begins with the meeting of organization in July, 1865; so that the society is really twenty-nine years old, lacking two months.

This society was organized about one month after the last surrender at the close of the great civil conflict. In that conflict many of its earlier members had been engaged. How many I have never known until recently, and I think no one has ever attempted an enumeration. Soon after I had joined the society, in 1880, I learned incidentally of several, and as the years went by I heard of others. Many of the facts which came to my knowledge from time to time were very interesting, and some of the personal experiences not merely interesting but thrilling!

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* Read before the Illinois State Dental Society, May, 1894.

It may seem to some of you a foolish sentiment, but I became possessed of a fascinating desire to learn the name and something of the history of every ex-soldier in this society. Then I said, why not make these things matters of record? I remember when the last old soldier of the Revolution died and was buried with great honors. The survivors of the war of 1812, according to the report of the commissioner of pensions for the year ending June 30, 1893, numbered eighty-six, who were paid $10,494.27.

There are thousands of persons to-day hunting for definite information with reference to deceased soldiers and unable to arrive at the facts as they might have been given by those men for themselves. So I began my work of investigation along this line, determined to get brief records of those who are living from themselves, and of those dead from their near relatives. I presumed the list would not be a long one—comprising, perhaps, twelve or fifteen. But I had underestimated the number by about half, for instead of a mere dozen or so I have found twenty-eight, and I am not sure now that one or more have not been missed, either among the living or the dead.

Gentlemen, these friends of ours whom we have known perhaps only as brother dentists and instructors, were engaged in dangerous business this year thirty years ago. They were enduring hardships and trials of which we younger men know but little. They faced danger and death, capture and imprisonment, wounds and disease, with a courage and heroism which may have been equaled before but never surpassed. I am proud to devote a portion of this paper to short accounts of their service, and to ask you to place them upon record, as a part of the sacred heritage of this society. I only regret that I have been compelled to make them each so brief, for if the tales were fully told there would be enough to make more than one very interesting book.

I will consider their names in alphabetical order, and it so happens that the name which easily stands first among men of science in dentistry heads this list of our *soldier contingent:*

GREENE VARDIMAN BLACK, Jacksonville, Ill. It may not be generally known that before this society had an existence our honored member had begun his career of original investigation under the tutelage of Uncle Sam.

As a member of Company D, 129th Illinois Vols. he was ordered into the secret service and kept there till discharged in 1864. In charge of a few selected men it was his business to look for obscure signs, and trace out many lost and tangled threads. If a dangerous microbe, a regular pyogenic staphylococcus in the form of a *spy* was supposed to be within the lines, Uncle Sam had discovered that G. V. Black was just the one to trace him. He can tell you if he will, many an interesting tale.

This line of investigation was very expensive, personally, to Dr. Black, as the following letter indicates:

March 24, 1894.

DEAR DOCTOR NEWKIRK:

Your letter asking where I was and what I was doing thirty years ago, *May* of this year, was received. In answer, I will say, without hunting up the records, that I was ill, at my father's house, I think in May. I had been in a hospital in Louisville, Ky., for about six months and was brought home in April. In the latter part of May I began to walk about and in the latter part of the summer I began practice in Jacksonville, having in the meantime been discharged from the army.

Yours truly,

G. V. BLACK.

JOSEPH MORTON BLYTHE, Decatur, was 2d Lieut., Company A., 63d Indiana Vols. Elected February, 1862, age eighteen. Battle of second Bull Run commanded company. Later, sick and in hospital. Went through Atlanta campaign under fire. Commissioned 1st Lieut. May, 1864. Next with Schofield following Gen. Hood. In battles of Franklin and Nashville, Tenn. Later, Anderson, Wilmington and Tower Creek, N. C. Mustered out July, 1865. He had been Blythe to enlist, and was no doubt blithe to resume the study of dentistry.

SAMUEL ALEXANDER CAMPBELL, Mattoon, Ill. Member of 76th Penn. Zouaves 1861 to 1863. Discharged on account of disability. Reënlisted 1864, Company H., 151st Illinois Infantry, at Quincy, and served till February, 1866. Followed Sherman, and was with the force which captured Gen. Warford, with 12,000 men, at Kingston, Ga.; said to have been the last surrender of the war, June, 1865.

Dr. Campbell also paid dearly for his experience, marching three days and nights during an attack of the measles, which nearly cost him his life, and permanently injured his health.

Campbell is a good Scotch name, and belongs to fighting stock. Both of our Campbells were "coming" when the war broke out, but they came from opposite directions. The next gentleman of that name is

John Campbell, of Bloomington, who has the distinction of being our one and only ex-Confederate. He went into service in 1861, as 1st Lieut. of Company F, 22d West Virginia Reg., served one year as Lieutenant, was then elected Captain of same company. Served as such until the disbanding of the army in 1865. Was in fifteen battles, and about seventeen skirmishes. On the 19th October, 1864, was twice wounded; through the left shoulder and through the left hip; was disabled for six months or more. Returned to command, and was sent home. February, 1866, came to Bloomington, arriving with seventy-five cents. Graduated later at Missouri Dental College. Joined this society in 1875. Has practiced dentistry in Bloomington, on same corner, in the same rooms, for twenty years. It is nearly eighteen years since he gave me all the assistance he could in my first study of dentistry and I shall never forget his kindness.

Elijah Brown David, Aledo, Mercer Co., Company A, 30th Illinois Inf., August 12, 1861 to October 27, 1864. Battles: Belmont, Ft. Henry, Donelson, Siege of Corinth, Port Gibson, Raymond (Miss.), Jackson (twice), Champion's Hill, Siege of Vicksburg, Atlanta.

Made 2d Lieut. after Donelson, and later, Captain. Promoted for gallant service. Before Atlanta, July 22, the day Gen. McPherson was killed, went into action with 25 men; lost 6 killed, 5 wounded, 3 taken prisoners. Total 14. But he is with us yet, hale, hearty and wholesome.

M. S. Dean, one of our members, deceased 1881, a highly respected gentleman and scientist, translator of Magitot's work, *The Dental Follicle*, was quartermaster for a time of a Michigan regiment in Western service.

Daniel Bigelow Freeman, one of our Chicago friends, has in his office a fine collection of curious things, dental and miscellaneous, which every one of us ought to see. Among them are several bits of well-battered lead which were stopped in their swift career by his person, about thirty years ago down in Virginia. He was a member of Company G, 10th Vermont Inf., from August 4, 1862, till May 31, 1865. (1st. Brig. 3d Div. 6th A. C.) He was in battles of Locust Grove, The Wilderness, Bermuda Hundred, Cold Harbor, Petersburg, and Rheam's Station, also in that of Monocacy, which probably saved the City of Washington from capture. He was on the skirmish line, and one of a few who escaped at the hands of the Confederate sharpshooters.

After working on a farm during boyhood, and practicing dentistry nearly thirty years, he declares that experience on the skirmish line the hardest day's work he ever did. He had some very narrow escapes in the field, and ten months' experience of hospital life.

ISAAC AUSTIN FREEMAN, Chicago, a cousin of D. B. Freeman, had a brief, but interesting experience, as member of Company D, 1st Vermont Cav. During his first year under Gen. Banks, in the Shenandoah Valley, while his regiment was making a rapid charge at Mt. Johnson to save a bridge, by the falling of his horse he received an injury which unfitted him for service, and compelled his discharge. His injury, however, did not prevent his capturing a prisoner, whom he compelled to help him into camp.

While we are with the letter F, we must not forget one of our Illinois boys who crossed over to St. Louis, but has met with us so regularly that we count him almost an active member.

ALBERT HOMER FULLER enlisted as a private in Company E, 118th Ills. Inf. Vols., August 4, 1862, was afterward appointed Commissary, then Quartermaster Sergeant, later commissioned 2d Lieut. of Company E of the same regiment. He was with his regiment from start to finish, serving in the departments of the Mississippi and Gulf. Was at the first attack on Chickasaw Bluffs, and at the battles of Arkansas Post, Champion's Hill, Thompson's Hill, Black River Bridge, Vicksburg, 18th and 22d of May, Jackson, Grand Coteau, and other engagements. Was mustered out of the service at Spring Camp Butler, October 1, 1865. Was absent from the regiment and from duty but thirty days during the whole time.

Dr. Fuller had also two brothers, both dentists, in the service, one of whom died from pulmonary trouble consequent on exposure, at siege of Fort Donelson; the other having been captured by Gen. Forrest, spent a year in Cahaba prison, Alabama, from which experience he has been an invalid ever since.

Most of you remember Dr. Hurtt, of Peoria, a faithful, active member for years, who removed to California for his health; now at Pomona, Cal., and a corresponding member.

JOHN MILTON HURTT writes—"I made three enlistments, all at Columbus, Ohio, first, in summer of 1861, "Home Guards"; second, irregular, December 12, 1861, Company H, 46th Ohio; third, regular enlistment January 8, 1862, for three years, in 18th Regt. of Inf., U. S. A. (Regulars). I was assigned to Company A, 3d Bat. of that regiment; my rank was sergeant.

The sieges and battles were: Siege of Corinth, Miss. Battles of Chaplin, Ky.; Stone River; Chickamauga; siege of Chattanooga, Tenn.; battles of Missionary Ridge; Hoover's Gap; Resaca, New Hope Church; Kenesaw Mountain; Peach Tree Creek; siege of Atlanta and battle of Jonesboro.

I served with the regular brigade, 1st division, 14th army corps, from the time I arrived at Nashville, next day after the fall of Fort Donelson, February 16, 1862, until discharged from Lookout Mountain, Tenn., January 8, 1865."

Dr. Hurtt's writing is wonderfully exact and neat. He once devised and made out a set of company records—the books twice took the premium over all competition, in the Army of the Cumberland.

As a specimen of his poetic descriptiveness I submit the following.

"The transcendent scenes of hundreds of camp fires lying at my feet, a sea of candles consumed in one evening at Graysville, Ga.: The cannonading of Kenesaw Mt., the battle of Hooker above the clouds (fog) at Lookout Mt., the movements of the two armies seen from Kenesaw, glistening arms, moving wagons, artillery and cavalry, flashing all colors in a brilliant morning sun, are some of the pleasing memories set over against the mud, rain, cold, heat, dust and the horrible carnage of war."

I am sorry to say that Dr. Hurtt's health is now so poor that he is unable to practice. A kind word from some of you would be gratefully received at this time. Write to him.

HOMER JUDD. All the older and many of the younger members treasure the memory of the learned, genial and honest Dr. Judd. We knew him as an authority in scientific matters, as a member of the State Board, and stalwart defender of dentistry against all foes and detractors. We knew him as friend and we mourned his taking off, but how many of us know that Dr. Judd at the commencement of the war served as acting assistant Surgeon United States Army, on the hospital steamers and in the hospitals in the West? After the battle of Shiloh he was one of four surgeons charged with the care of five hundred wounded soldiers on board a hospital steamer. His health becoming impaired he was compelled to visit Minnesota for rest and recreation. Subsequently he was appointed surgeon of the 40th Regiment Mo. Vol. and served with them at the battles of Franklin, Nashville and Spanish Fort. He remained in the service for some time after the war, being stationed at Huntsville, Ala. He was mustered out of service in the latter part of 1865, returned to St. Louis and entered upon the practice of dentistry. (A portrait of Dr. Judd may be found as frontispiece, Ill. Trans., 1891.)

CHARLES AMBROSE KITCHEN. The next in order is one who, like Wellington, "Stands four square to all the winds that blow," a modest gentleman with the modest, wholesome name of Kitchen.

Where was he and what was he doing a little more than thirty years ago? Chance if he ever told you anything about it. He was making "music for the boys" as a member of the Band, 33d Ill. Vol. Infy., a regiment raised at Normal and Bloomington, composed mostly of teachers and students and dubbed "The Brain Regiment." (Col. Hovey.)

Our friend Kitchen tramped with his command twice across Missouri and once through Arkansas, and was in at the severe battles of Fredrickton and Cotton Plant, Ark. A part of this time he was a meagerly supplied Kitchen, living on less than half rations. He was mustered out of the army in time to be mustered into the State Society at its organization, and he has not missed a meeting for twenty-eight years.

The next upon the list is the name of one possessed of such versatile ability that he might have achieved distinguished success, either as a journalist, lawyer, surgeon, soldier or man of business, as he has in our profession. Before his name is announced you all know that I refer to

COL. CHARLES RUDOLPH EDWARD KOCH, who enlisted August, 1862, as private in Company G, 72d Illinois Vol. Inf. (Chicago 1st Board of Trade Regiment). August, 1863, became 1st Sergeant in the 58th U. S. C. I. November 5, 1863, Captain 49th U. S. C. I. Participated in affairs of Clarkston, Mo., and Osceola, Ark.; Grant's Northern Mississippi campaign; Lake Providence and Yazoo Pass expeditions; Vicksburg campaign including Champion Hill and assaults of May 19 and 22. Assisted in paroling prisoners. Participated in expedition to and capture of Natchez. Was here detached to serve as chief clerk at headquarters of the district under Gens. Ransom and Gresham. Then as Aide to Adjt. Gen. Lorenzo Thomas, who was engaged largely in reconstruction work, and especially in protecting the interests of the freedmen. Rejoined command early in 1864 and participated in minor campaigns for protecting Uncle Sam's interests along the Mississippi Valley. May, 1865, assisted in capture of Yazoo City, of which he was made Provost Marshal. August, was ordered to Vicksburg to assume charge of Provost Marshal Dept. Western District of the Mississippi. Held this position under, and to the satisfaction of three commanders, Gens. Maltby, Force and Osterhaus, till mustered out of service March 23, 1866. Considering the unlimited functions and authority of his office, and the trying days of reconstruction, which required the exercise of the greatest circumspection and good judgment, his success in this difficult position reflected great honor upon himself, for we must remember he was not yet twenty-two years old. In April, 1866, he returned to Chicago and at once resumed the study and practice of his chosen profession—dentistry.

During the railroad riots of 1877 he became captain of a company of war veterans, who defended the southwest portion of the city for over a week against a turbulent mass of rioters. Organized Co. "I" 1st Infantry Ill. Nat. Guard immediately after, and was commissioned Captain of same August 19, 1877. Became Major of the regiment April 24, 1886; Lieut. Colonel, February 13, 1888, and Colonel, April 30, 1889. Resigned his commission November 1, 1893.

REUBEN NEAL LAURANCE. The initial "L" was represented by a man of clear grit, as those who have associated with him most know the best. I will let his story be told by his letter to me, which is a model of much in little:

LINCOLN, ILL., March 28, 1894.

Dear Dr. Newkirk: Yours received. Pardon delay. I had to look up old "muster roll" to get information. Originally entered service as private Company F, 38th Ill. Vol. Inf., at Atlanta, Ill., August 16, *1861*. *Promotions:* Corporal, Sergeant Major, 1st Lieut. Company F, and R. Q. M. 38th Reg. In actions: Siege of Corinth, May, 1862; Chaplin, Ky., October, 1862; Knob Gap, Tenn., December, 1862; severely *wounded* in face at Stone River, December, 1862; Liberty Gap, Tenn., June, 1863; wounded in thigh at Chickamauga, Ga., September, 1863; in Atlanta campaign, 1864; Franklin, Tenn., November, 1864; Nashville, December, 1864. *Mustered out March 20, 1866, service four years and eight months.* I belonged to Sherman's army. It was mustered out in 1865. But

I was kept in until 1866, on *staff duty in New Orleans and Texas with my command.*

Yours truly,

R. N. LAURANCE.

The story is briefly told, but there are volumes between the lines.

Not to be outdone by the Ks, our friend,

IVERSON ALLEN LUMPKIN, of Mattoon, comes forward to make two of the Ls. He was a volunteer under Caleb Jackson, Missouri State troops, served only four months, but saw enough of war to satisfy his curiosity in the battles of Boonville, Carthage and Wilson's Creek.

J. FRANK MARINER. As we might expect to find, the letter M was well represented. It stands for military, Mariner, Matteson, and Matthews. J. Frank, "our Mariner," took a horse for his ship and sailed through the South land as a member of Co. L, 15th Ill. Cavalry. Enlisting as a private, he came home a Major. He was at Ft. Henry, Donelson, Pittsburg Landing, Siege of Corinth, Farmington and Siege of Vicksburg; afterward a 1st. Lieut. in command of company, acted as escort successively for Gens. Grant, Halleck and Dodge. This Mariner of ours, so modest, and almost timid of speech in the meetings of this society, can tell you if he will of dangerous exploits and dashing charges, that will quicken your pulse and stir your blood. Next comes

CHARLES FRANKLIN MATTESON, who enlisted at Galesburg, Company E, 117th Ill., April 19, 1861. Transferred October 2, 1862, to Company G, 103d Ill., 1st Lieut., soon afterward Captain, in Army of the Tennessee. Was in thirty-two battles, among them Donelson, Shiloh, Corinth, Vicksburg, Jackson, Lookout Mountain, Atlanta campaign and March to the Sea. Company E was color company at Shiloh; with thirty-two men, lost nineteen. 1864, at Savannah, C. F. Matteson was detailed as Asst. Quartermaster 15th A. C. in charge of 1,000 to 5,000 men, handling all stores for the corps, serving here until March, 1865; Morehead City till May 9. Rejoined command at Washington. Mustered out at Louisville, June 21, and *paid off at Chicago*, July 9.

A. E MATTESON, younger brother of C. F., enlisted as a member of the band, 26th Ill. Inf. Saw service at New Madrid, Siege of Corinth, Island No. Ten, and Farmington. Acted as volunteer aid to Gen. Thomas at battle of Nashville.

RODOLPH MATTHEWS, now of Wichita, Kansas, formerly a member of this society, resident of Pontiac, where for nine years he was associated with Dr. Townsend, is also an ex-soldier of Illinois.

Enlisted at Oquawka, Ill., July 28, 1862, Company G, 84th Vol. Infty. Discharged June 8, 1865, at Nashville, Tenn., (3d Brig., 1st Div., 4th A. C.) Was detailed as Company clerk and adjutant's clerk, and was with his regiment in all its marches and battles, except for a short time when he was in hospital at Louisville. The regiment was in battles of Chickamauga, Lookout Mountain, Missionary Ridge, Ringgold, Resaca, Atlanta, Jonesboro, Nashville, and Franklin.

It grieves me to state that neither "N" nor "O" has a representative in the list, but we are in a measure consoled by the record of our *Quaker friend from Whitehall*,

THOMAS WESTERN PRICHETT. He says in answer to my queries:

> "Student of Uncle Sam—1862, class 91 Sec. G, (91st Reg. Ill. Inf., Company G). Three years' course. Graduated July 12, 1865. High private, (6 ft.) *Brevet corporal.* Pension *not* applied for. May 8, 1864, was at Brownsville, Texas.
>
> Ever yours,
>
> T. W. PRICHETT."

I happen to know that between these quaint lines you may read if you will the record of a most arduous service by one of the most faithful of men. Besides purely military service, he endured at Brownsville and on Brazos Island, Texas, climatic and dietetic hardships which nearly cost him his life.

I have but recently been informed that our member from Belleville, a man justly celebrated for original research and scientific attainments,

JOHN JOSEPH RAVENSCROFT PATRICK, in addition to his many other honors bears those of the military. He served with Co. G, 130th Reg. Ills. Vols., from the mustering in thereof October 25, 1862, till January, 1864. From January 23, 1863, to February 10, 1864, he was captain of his company, and participated in the Vicksburg campaign, and from Milliken's Bend, through battles of Port Gibson, Champion's Hill, Black River Bridge, and charges of May 22 and 23. After surrender of Vicksburg, regiment assisted in ten days' siege at Jackson, Miss., resulting in capture. Returned to Vicksburg, was transferred to army of the Gulf, under Gen. Banks ; went via New Orleans to Texas, where Capt. Patrick resigned because of poor and failing health.

His resignation at this time was fortunate, for he just escaped the ill-fated Red River expedition, wherein almost the entire number of the regiment were taken prisoners and kept at Tyler, Texas, thirteen months, suffering great privations.

MARK H. PATTEN, who was a member of this society many years, also belonged to the military list, having served from July, 1862, till the close of the War—first 100 days in Company F, 71st Ill. Inf., afterward in Co. C, 10th Ill. Cav. A part of the time he was in the United States army mail service, delivering to the boys their anxiously looked for "letters from home."

With "R" we meet a royal man from Carthage—one with a plural name and a heart big enough for two.

E. M. ROBBINS, Private in Company H, 78th Ills. Vol. Inf., enlisted July 1862; was always in the front, participating in the battles of Chickamauga, Mission Ridge, Sweet Water, and all the principal battles of the Atlanta campaign. Went with Sherman to the Sea, thence from Savannah to Goldsborough and Rolla, where Johnson surrendered, thence onward through Richmond to Washington, where he was one in the grand review and mustered out—all for $13 a month, in depreciated currency, the last of which was received in Chicago in June, 1865. There'll be a pension in heaven for all such men.

The initial "S" has four representatives on our list. In 1863, there was living in Pennsylvania, a boy named

GEORGE D. SITHERWOOD. He enlisted first for ninety days in an independent regiment of cavalry—State guards—and served as bugler. Enlisted later in Signal Corps, U. S. A., at Indiana, Pa., for five years. Sent to Signal Camp of Instruction at Georgetown. Again served as bugler. Was on the skirmish line at Fort Stevens, when capture of Washington was threatened by Gen. Early. February, 1865, transferred to Hilton Head, and later to Fort Pulaski, near Savannah, Ga. Station flagged the news of the capture of Jefferson Davis, telegraph lines being cut. Honorably discharged August 12, 1865.

"S" is a musical letter, and while our friend Sitherwood was rousing the echoes of the Pennsylvania and Virginia hills with his bugle,

GILMAN T. SMITH was inspiring the boys of the 47th Ill. Vol. Inf. with the stirring notes of a 1st B cornet. Remained one year in service, till all regimental bands were mustered out. Is now commandant of Ferris Post 309, G. A. R.

Ezra Hazen Stewart, Joliet, has written me this brief account of his service:

Joliet, Ill., March 27, 1894.

Dr. Garrett Newkirk, Chicago, Ill.

Dear Sir:—In reply to yours of the 23d inst. would say that I do not think that my experience in the army was different from most people, unless I was more frightened in the first action than generally falls to the lot of man. I enlisted in Company H, 4th Vermont Inf., September 2, 1861; served under McClellan through the "Peninsula Campaign," and participated in most of the actions, more particularly Lee's Mills, Williamsburg, Savage Station, etc. Am happy to state that I returned with my bones in fair condition. Yours truly,

E. H. Stewart.

Dr. Stewart was evidently a young man of courage, for he has the courage now to tell the truth about his first battle. He probably tried to conceal his feelings, and every other man in the regiment did the same.

The next to mention is a veteran of war, and a veteran tried and true of this society. If we were asked to describe his character in a single word, it would be *faithfulness;* for he has never been known to swerve from the line of duty or fail in the performance of whatever he had undertaken. You all know that I refer to

Col. Edgar Denman Swain. In June, 1861, he organized at Batavia, Ill., Company I, 42d Regt. Ill. Vol. Inf., mustered in July 22, and chosen Captain. September 21, marched to Benton Barracks, St. Louis. October 18 to December 13 took part in Fremont's campaign to Springfield, Mo. Winter quarters at Smithton, Mo. February 3, left under orders for Fort Donelson. Marched to Cairo, thence to Columbus, Ky., March 4, Island Number Ten; March 15, on its surrender was detailed with company to take captured officers to Cairo, on captured steamer, "Admiral." Took part in Mississippi River campaign to Ft. Pillow. Joined Gen. Pope, engaged in Siege of Corinth and battle of Farmington. Joined Buell at Nashville. Entered on Murfreesboro campaign December 26, including battle of Stone River. Took part in campaign under Rosecrans, which ended in being besieged at Chattanooga. Siege broken by battles of Lookout Mountain and Mission Ridge, with expedition to relieve Burnside, at Knoxville. January 1, 1864, Company reenlisted as veterans. After furlough joined Sherman's army for campaign to Atlanta. Part of force under Gen. Thomas against Hood. After Hood's defeat, followed his broken army to

Tennessee River. Returned to Nashville. From there went, via Tennessee and Mississippi Rivers and New Orleans, to Port Lanasa, Texas, arriving July 23. Camped upon Placida Creek, same camping ground used by Col. Jefferson Davis, with his Mississippi regiment en route to Mexico, in 1846. July 15, 1865, was ordered by Gen. D. S. Stanley to assume command of 3d brigade, 2d Div., 4th A. C. Retained this command till his own regiment received orders to be mustered out. Asked to be relieved of brigade command to accompany regiment home. Mustered out at Springfield, Ill., having served four years, seven months; retiring as full Colonel of his regiment by commission. Breveted Colonel of U. S. Vols. by U. S. Senate, March 13, 1866, for meritorious service.

Joined 1st Regiment Ill. National Guards March, 1877; served as Major and Lieut. Col. through the period of railroad riots same year. Commissioned Colonel and left the service of the State five years later.

Col. Swain was wounded in the knee by a bullet during the Atlanta campaign, but kept at the head of his command, the "boys" lifting him to and from his horse.

Samuel Coleman Wilson was an honored member of this society, living at Bloomington; died June 27, 1881. I have been able to learn only the following particulars of his earlier life. He was 1st Lieut. of Company F, 168th New York Vol. Inf., was in second battle of Bull Run, 1863. Suffered sunstroke while in service, from the effects of which he never recovered, his death having been, as it was believed by physicians, traceable to this cause.

In tracing out the records and history of the various members of our military contingent, I have found it true, that scarcely a man went through the service without some sort of injury aside from wounds, as the result of hardship and exposure. It is not surprising that this should be so, when we consider all that is involved in a soldier's life.

Our list closes with the name of

Walter Benjamin Woodward, formerly of Peoria, now of San Diego, Cal., formerly an active, now a corresponding member of this society. At the age of eighteen he enlisted from Jacksonville, Ill., college, in Company C, 145th Ill. Vols., a company raised by Prof. Crampton, of the college. This was near the close of the war, May 19, 1864. The enlistment was for one hundred days, and the regiment was discharged in a little more than four months—September 23, '64, after having done garrison duty at Rolla, Mo., and Alton, Ill.

The United States has reason I think to be proud of the conduct generally of her citizen soldiers north and south at the close of the war.

Never in the history of the world had there been such a sudden and general disarmament in any country, and the quiet return of so many men from the highways of war to the pleasant paths of peace.

Our "boys" returned at once to their dental offices and soon enlisted in the ranks of this and other societies. In fact some of them were at the very start, in Illinois, and have never wavered in the line of march to this day.

Thirty years ago there was one dental society in the State of Illinois. The Chicago Society was organized February, 1864. Fifteen years ago there were but two—this and the Chicago. To-day there are eleven, viz.:

The Illinois State Dental Society.
The Northern Illinois Dental Society.
The Southern Illinois Dental Society.
The Central and Western Illinois Dental Society.
The Eastern Illinois Dental Society.
The Chicago Dental Society.
The Chicago Dental Club.
The Odontological Society of Chicago.
The Odontographic Society of Chicago.
The Hayden Dental Society of Chicago.
The Atkinsonian Society of Chicago.

Besides these there is the Tri-City Society, partly of Illinois, a union society of Rock Island, Moline and Davenport, and the Quincy Dental Society.

The Illinois State Society has had a career of uninterrupted prosperity and usefulness.* The relation of its members has been almost uniformly that of friendship, mutual confidence and respect. With a military step, it has marched steadily forward and never suffered defeat, save once or twice, in a skirmish with the State Legislature.

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*For a history of the society for twenty-four years, see paper by Dr. Koch, Trans. 1889.

But we are going to move on that host again with the swords of argument and petition, and it is but a question of time when we shall conquer for the State of Illinois an efficient dental law.

The membership of this society has ever had, I think, a good deal of the soldier spirit within its ranks. The true soldier is brave ; he has the courage of his convictions. He is honest, believing in the right of his cause. He is loyal, steadfast, and unwavering. He performs faithfully whatever duty is placed upon him. He is self-sacrificing, not expecting to be paid in one way or another for everything he does. Above all, he is *patient.* If matters are not going as he thinks they should he does not stir up strife, but waits until they can be regularly righted. He never *deserts* nor refuses to act because something has been done of which he personally disapproves. As a subordinate he is obedient to rules and orders. As an officer he is not overbearing, but enforces the law.

What is the spirit which has made England such a power in the world ? Largely this : That every English boy is trained to believe that he has the proudest heritage on earth in that he was born an Englishman. With him it is England first, all the time and forever. Where England's power, or interest, or honor is involved, there he stands in his place, immovable as Gibraltar or the squares of Waterloo. If the order is "Forward," he goes even "Into the jaws of death," as at Balaklava, when "some one had blundered."

Something like this enthusiastic loyalty is necessary for us. I would that I might to-day command the attention of every honest and respectable dentist in the State of Illinois, especially the young men; I would say to each one, "If you are not already a member of the State Society *enlist at once*, and enlist not for a year or two years, but for *life.* Come into our battalion, and come *to stay.*"

Our interests are all bound up together in this great commonwealth. If we were united, earnest, enthusiastic, determined, as we should be, from Chicago to Alton, and from Galena to Cairo, where would be the legislature that would refuse to accede to our reasonable demands for a more efficient law ?

I believe it to be the duty of every dentist who wishes to occupy an honorable place in his profession, or as a citizen in the community where he lives, to be a faithful life member of at least two societies. First, the State Society, where he can stand shoulder to shoulder with the profession as a whole within the State. Second, his nearest local society, wherein he may have an intimate fellowship with his immediate neighbors. And now I close with this appeal to the local societies of the State, north, south, east, west, and every one in Chicago :

Stimulate and encourage your young men to become members of the State organization. Let that be the grand rallying point of the year.

A strong State society is essential to the strength and unity of our profession in Illinois. There must be a general meeting place for men of all sections of the State, else how can they sustain their acquaintance and act in harmony?

Let it be our ambition to make this society stand in the future as it has in the past, for all that is sound and progressive in dentistry. Let us ever cultivate the spirit of friendship, and make the social features alone so hearty and wholesome that none can afford to miss them.

The great International Dental Congress has been, and is now a thing of the past. Probably we shall not, in a lifetime, see its like again. Its chief value consisted, I think, in bringing together men from all parts of the globe, and establishing a world-wide relation of fraternity.

But our State Society is ever with us, and her blessings are perennial. May she never lack for soldiers, loyal and enthusiastic, and may her flag forever float as the yearly rallying point for dentistry in Illinois.

MATURED THOUGHT.*

BY I. P. WILSON, D. D. S., BURLINGTON, IA.

Each of our annual meetings should be the time for harvesting the golden grain of a year's labor. Seed time must precede harvest, and sufficient time must intervene for germination, growth and maturity, or a rich fruitage may not be expected. Nature demands time for the series of progressive changes that must take place before the products of the orchard and the field are matured and ready for man's use.

So it is with a conception of a thought or an idea. The germ of a great truth may suddenly spring up in the mind, but in its immaturity it may be warped with error, deformed by unscientific reasoning and robbed of the very semblance of truth by thoughtlessly jumping at a conclusion.

I remember many years ago of a prominent dentist who would become very enthusiastic over some new idea that had suddenly dawned upon him, when he would rush into our society meetings and into our dental journals with his newly acquired treasure, and with mouth and pen deal out his immature thought to the brethren, who well knew that what he said must be taken at a heavy discount. His teachings were theoretical, not practical. Young practitioners were often misled until sad experience revealed the error, and disclosed the truth. I recollect on one occasion while speaking before our society with considerable enthusiasm on some new born thought that had, on the spur of the moment, sprung up in his mind in connection with a discussion that was going on at the time, when he suddenly stopped, and said, "Well, I see that I have gone off halfcocked again." He had reasoned himself clear off the grounds he had taken, and with flushed cheek, and amid the merriment that followed he took his seat. On another occasion while drilling out an old amalgam filling, it occurred to him that some agent ought to be employed to dissolve that filling without so much physical labor on the part of the operator. He commenced theorizing, when the happy thought occurred to him that as mercury will produce crystallization, it ought to reduce it. He immediately jotted down the thought, and incredulous as it may seem, without ever making a practical test of his new theory, he hurriedly sent it off to a dental journal for publication. In due time the item appeared, and was afterward republished by one or two other dental journals.

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*Read before the joint meeting of the Iowa and Nebraska State Dental Societies, May 1894.

How many dentists put the so-called valuable discovery to the test does not appear, but as the gentleman was well and favorably known, it is fair to suppose that not a few eager ones tried the experiment.

In justice to our theorizing brother, I ought to say, that he was a pioneer in dentistry and has furnished the profession very many valuable suggestions of a practical character, that have had much to do with our successful practice to-day. His speaking and his writings were of a gushing nature, and occasionally gems of thought would drop from his pen and his lips without any apparent study. Indeed there are many examples of living thought being thrown out upon the world, which seem to have been the result of sudden inspiration, and not of labored study. But these bits of jewels usually come to us in short sentences, and in the simplest language. A scientific paper, with a chain of thought and reasoning must be wrought out from careful study, from labored thought.

A man who values his literary reputation cannot afford to offer his writings to a scientific society or to a critical profession, without the most diligent preparation—without matured thought. The unstudied thoughts of a careless writer, usually perish with their using, while the writings of the careful student live to bless mankind. The one furnishes crude material, the other refined, ripened thought, ready for use. The one furnishes chaff, the other garnered grain, the one dross, the other gold.

What we offer this society, my brethren, should be condensed, boiled down thought. What we write to-day should be revised and rewritten at a later day, when much redundant matter will be discovered and cast aside. Thoughts covered up with a multiplicity of words, must be divested of their covering, that the naked truth may be revealed. Let any one hurriedly select a theme upon which to write, and then on limited time study to manufacture thoughts in connection with his subject. He will find it hard work to write, and his readers will find it still harder to read with satisfaction and profit what is written. And should the author himself lay aside his hastily written paper, and dismiss it from his mind for a few months, he will scarcely know his own production, when he reads it again, and will be surprised at its ambiguity and incoherency. I speak from experience when I write thus, as well as from the testimony of others.

And now I declare to you with reluctance what I believe to be a fact, that our society has of late years encouraged trashy literature. A few week's notice from our executive committee that a paper is desired, and the subject of it "*immediately* furnished, as the programme must come out in a few days," is not sufficient time for suitable preparation for our annual meeting. We are busy men, and most of us must write either early in the morning when we should be resting, or in the evening when the taxing duties of the day are over, when our eye-lids are heavy, our intellect dull, and our brain inactive.

I will venture the suggestion here, that our Executive Committee commence its work for next year immediately after going home from this meeting. Let the essayists be selected early in the year, and let the topics they will discuss be furnished the members of the society at least three months in advance of our annual meeting. Then with notebook and pencil near at hand, we shall be able to record our best thoughts as they come to us in daily practice, not only on the subject of the paper we are to prepare ourselves, but also on the topics announced by the other essayists. With a memorandum of this kind before us, we have the very best material we are able to produce from which to write for this society. If we would make center shots, if we would hit the mark, we must take deliberate aim.

Some years ago a presiding elder was to preach his quarterly meeting sermon at a church I was attending. When he arose to speak he said, "As I entered your church this morning the following text of Scripture came into my mind, and as it still rings in my ears I have concluded to preach from it instead of the text I had intended using." Such an announcement was an insult to an intelligent audience ; no man has a right to consume the valuable time of thinking men and women with an unstudied, commonplace harangue, for such was the sermon the presumptuous fellow gave us. Intellectually it was an old-fashioned homœopathic dilution. Physically, it was a labored effort, and although rather hard on the speaker's vocal organs, it must have been very beneficial to him as a gymnastic exercise.

A pious mother and her little boy were going home from church when the following dialogue took place. "My son," said the mother, "wasn't that a powerful sermon we heard this morning?" The little fellow hesitated and then said, "Oh, I don't know that it was." The mother was grieved, and said, "I am very sorry, my son, that you did not enjoy that sermon. You should be more serious, and listen to what the preacher says." "Well, mother," said the little fellow, "what did the preacher say? He screamed, and stamped the floor, and pounded the bible, but what did he say?" The good woman could not tell what he had said, and although the physical contortions of the man had aroused her sympathy, she could not recall a truth that he had uttered.

A young clergyman was to preach a trial sermon in the presence of the bishop. After he had finished a tempestuous discourse he turned to his distinguished auditor, and with an air of importance said, "Will the Bishop please lead us in prayer?" The venerable man quietly and solemnly raised his voice in supplication, and closed his prayer with these words, "Oh Lord, wilt thou puncture the belly of this young man and let the wind escape that he may be profited thereby. Amen." This was heroic treatment, and ought to have had the desired effect.

Let us notice in contrast with the above examples the experiences of some of our distinguished men.

It is said of that eminent divine, the late Bishop Simpson, that he had less than a dozen great sermons, and that each of those sermons cost him years of concentrated thought, the result of which has made the name of Simpson immortal.

I once had a pastor who preached a great many commonplace sermons, but occasionally he would treat us with a masterly discourse, when his strange eloquence would captivate his audience and hold it spell-bound before him. This man spent but little time and effort in the preparation of these poor sermons, while weeks and months of close study wrought out the grand discourses he occasionally gave us.

Public speakers have told me that not only hours, but sometimes days are spent by them in coining a single sentence.

It is said of Daniel Webster that when in the United States Senate, he made an impromptu speech on a certain occasion, when he gave utterance to one sentence, that charmed his distinguished auditors, and after taking his seat he was congratulated by them for having coined, on the spur of the moment, the grandest sentence they had ever heard. Mr. Webster replied, "Why, I constructed that sentence ten years ago, and have been waiting all these years for an opportunity to use it, and that opportunity has never presented itself until to-day."

Some years ago while attending the International Medical Congress at Washington, D. C., I had the pleasure of dining several times with the late general Belknap, who was regarded as one of the very best impromptu speakers. He stated that he was expecting to attend a soldier's reunion in the West a few weeks later, and as he would most likely be called upon to speak, he must set about preparing himself for the occasion. I reminded him of his reputation as an impromptu speaker, and said that I did not suppose very much preparation would be necessary. "Why," said the general, "I never attempt to make a speech without careful preparation." And when I expressed my surprise, he said, "Go with me, if you will, to my private room, and I will show you a little book that contains a number of my short, carefully prepared speeches, all of which I have committed to memory. Several of these are presentation speeches, one is suitable for presenting a watch, another a coin, and still others that may be utilized in various ways. I have, then, quite a number of after-dinner speeches, so that if a banquet is in prospect, or any other social gathering where there is a possibility of my being called out, I select a speech from my little book that is most suitable for the occasion and, after refreshing my memory I go prepared for almost any emergency." "But," said I, "General, how do you make these prepared speeches fit the different occcasions?" "Oh, easily enough," said he, "I leave a little blank in the middle of each speech to be filled in, it may be, with a single sentence so it has special reference to the spirit of the occasion, and due credit will be given for an impromptu speech. Oh yes," said he, with a smile "that is the way it is done, and we all do it."

It is said of some of the best writers for our dental journals, that they tax their brains to the utmost, in *grinding* out every sentence they write. But their writings do not seem to be labored. They read smoothly, as if their thoughts had flown easily, and frequently from a ready pen. Many of them only prepare two or three papers yearly, but they are worth reading when they are published.

Of course, the writer or the speaker who is in daily practice has an immense advantage over men whose time and attention are taxed from morning until night, day in, and day out, as are the members of the dental profession.

Let us disabuse our minds of the thought that literary work is light and trifling, and let us remember that "there is no excellence without great labor."

ELECTRICITY IN DENTISTRY.*

BY W. W. VANCE, D. D. S., KEARNEY, NEB.

I presume when your committee asked me to write upon the subject of electricity in dentistry, they did not mean to limit the scope of the paper to simply the application, for to enumerate the various uses to which this mysterious agent can be put in the practice of dentistry would be about all that could be said on the subject.

I will, therefore, go into the detail of the subject so far as the dentist's need, and the various ways of producing the current at present in common use.

Electricity serves the dentist best in its present form as a means of furnishing a cheap, efficient and reliable power, in which classification the electric mallet may be considered.

Its next most important office is to furnish the only available means of effectually lighting up the oral cavity for the purpose of seeing into inaccessible cavities, and being the best means to positively determine the presence of caries on approximate surfaces of teeth in cases where the decay has not progressed far enough to cause an open cavity.

Its next application is the different forms of the cautery; under which head come the root canal dryer and the hot air syringe, also the actual cautery to obtund sensitive dentine.

There are a number of other applications that appeal more to the admiration of novelty than to their actual use. For instance, a dentist of my acquaintance has used electricity to light his gas, to announce to him the fact that a person had come to his office by making a contact when the person stepped on the mat at the door. This would ring a bell at his residence, unbolt the office door, expose a sign just inside the door as the door opened, with the words "walk in" printed upon it, ask the party to be seated, and state that the doctor would be down shortly. All of these things are mechanical contrivances using that unforseen force called magnetism excited by the passing of the mysterious current. However, of all the uses to which electricity can be put for the use of the dentist, I consider that of power the most important, and a few thoughts in regard to the best means of accomplishing that may not be out of order.

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*Read before the joint meeting of the Iowa and Nebraska State Dental Societies, May, 1894.

In the laboratory we need from one-eighth to one-fourth horse power, and it matters little whether the source of power be from a current of high or low voltage, so long as it is supplied with unceasing regularity and absolute reliability. In order to do this more than one source of power must be connected to switches under your control. In cities where there is no day current either for lighting purposes or power circuits, two methods may be mentioned either of which has some disadvantages, but neither so great that they may not be used. These are the storage battery and the gas, or gasoline engines driving generators and located conveniently to the laboratory, but far enough away so that the noise of the engine will not be a source of annoyance. The objection to the storage battery is the care of it and the liability through carelessness of having it get badly out of order. The objection to the engine is the first cost of your plant, but once in, it is the ideal thing under existing conditions, for it is safe, reliable and efficient; does not easily get out of order, and once started will run with practically no care or attention; does not require the services of an attendant, and contains more good points to recommend it than anything I have ever tried. In cities supplied with a day circuit either for running street cars or for furnishing other power, the dentist would be fortunately situated so far as power is concerned.

It must be remembered that the instruments at present supplied to dentists, for the most part, require a current of low voltage and large quantity, such as is given by a storage battery of three or four cells, say about six volts, and from eight to twenty amperes of current. Such a current cannot profitably nor safely be obtained from the high voltage circuits except by mechanical converters consisting of a motor for power and generator for the low voltage current required, the motor to furnish the power for the laboratory lathe and drive the generator to operate the instruments at the chair. This arrangement may be either two separate machines, or what is called a motor generator, in which case the generator part does not excite its own fields, but both sets of windings are on the same armature, the shaft carrying two commutators, one for the motor coils, and the other for the generator coils, one set of fields answering for both. This in point of mechanical construction is the preferable, but is open to the very serious objection that your removal from a high pressure current at your chair is simply a matter of insulation, which at best is only a matter of degree, and copper dust from the commutators or oil charged with metallic sediment is very likely, at unseasonable times to defeat the end. Consequently I am very much in favor of entirely separate machines, the generator being what is known as compound wound and self-exciting, that is so wound that the field coils contain one layer of wire that is connected in shunt with the armature, and another layer of wire slightly coarser connected in series with the armature and the external machine doing your work. The object of this is to maintain a steady current under varying load.

The motor to drive this small generator should have considerable surplus power, and I consider a five hundred volt circuit a perfectly safe current to bring in the laboratory, if properly installed. Yet I believe anything above six or eight volts an undesirable current to carry to the chair, although I am continually using a two hundred and twenty circuit at my own chair, but would say that eternal vigilance is the price of success and immunity from little leakages of current that are unpleasant to say the least, if your patient accidentally gets in circuit.

The reason for this continual danger exists in the fact that there is nearly always what is termed a ground on one of the wires from the power generator. In wet weather this is always worse, and where the fountain spittoon is used patients are liable to be in contact with metallic parts of the chair, and are consequently in the same condition as if they had hold of one of the wires from the generator. To touch the other by accident or intention is to close the circuit through such portion of the body as may be be-between the points of contact. To obviate this, low voltages and large quantities are used which will give the same results as small quantities and high voltages, as is the case in commercial plants whether for lighting and power combined, or for power plants only.

The *constant current* circuit commonly called the arc lighting circuit is a very high voltage circuit and extremely low quantity and is not a desirable means of obtaining power, except for the purpose of charging storage batteries and then to do so with any degree of rapidity it would be necessary to have rather small cells.

I do not consider the constant current circuit a desirable circuit to bring into the office, for while it may be safely handled the accidental contact with water, steam, or gas pipes makes it a very dangerous circuit to handle, for the voltage often runs as high as three or four thousand volts.

But using the *constant potential* circuits of 110, 220, 440 and even the 500 volt circuit, I consider safe as sources of power, and when you have plenty of power, then transforming that power or so much of it as you require into the proper kind of current is only a matter of equipment. My own equipment, than which I have seen nothing better, consists of a half horse power motor, shunt wound for 220 volts, and furnishes ample power to drive two lathe heads and also to drive my six volt generator to operate the electrical instruments requiring that kind of current.

It also answers nicely as a generator to furnish a 220 volt circuit for my 220 volt series wound motor mounted on the cord engine base and another motor of one-twentieth horse power mounted on a bracket arm and carrying a sleeve and cable, which outfit also runs on a high voltage, although not quite so high as the cord engine motor, about 110 volts, obtained by means of what is known as a shunt circuit. The one-half horse motor, when used as a generator I drive by means of a gas engine; the only necessity for this is in case of a shut down for any reason in the power station.

I intend eventually to abandon the use of any high voltage motor for use at the chair except for the cord engine base, as that motor is in no way in metallic contact with the standard and consequently with the hand piece, for the motor is mounted on a wooden base and the power is transmitted to the driving pulley by a belt.

I like the high voltage motors for this reason, however, that when you make your contact or in other words turn on the current they go, a thing that a six volt machine will not always do, as at that low pressure particles of dust or charing from sparking will sufficiently insulate often to prevent the current from flowing and then you have to hunt around for the cause, often having to go over your entire line and trying all the connections to find and remove the cause. With 110 or 220 volt circuits there is seldom or never any trouble from this source.

As a therapeutic agent electricity has not been the success in my hands so far, that I should like to see it, although there are some cases that, I think, might furnish valuable information by experiment.

The use of electricity by the dentist saves him much manual labor, enables him to better serve his patients, and I venture the assertion that any one who has once used it, possessed of a successful equipment, will for no reasonable consideration abandon it.

You can do your work better, faster, easier, and with more comfort and greater safety and ease to your patients than by any other way, and I think when the time comes that manufacturing concerns realize the importance of constructing well-made and mechanically perfect machines at reasonable prices the larger per cent of live dentists will possess themselves of electrical appliances, and acquaint themselves with the knowlege to take care of them properly. Then we may expect success from all of them.

As the science becomes better understood there will be less prejudice against it and as it becomes more in command we will have better machines, more perfect appliances and consequently less trouble in its use.

RECIPROCATION OF FORCE IN ORTHODONTIA.*

BY C. S. CASE, D. D. S., M. D. CHICAGO, ILL.

When Archimedes proposed to lift the world if he had a place upon which to rest the fulcrum of his lever, he tacitly expressed the same fundamental idea that arises often in the mind of one who contemplates the correction of malposed teeth.

A dental regulating apparatus is an instrument interposed between a moving power and a resistance, with a view of changing the direction of force or otherwise modifying it. Therefore, it is a machine subject to the same laws of force as other machines.

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*Read before the Illinois State Dental Society, May, 1894.

There are certain fundamental principles underlying the action of applied force in a dental regulating machine which are not always recognized or fully appreciated, and which I believe to be important for us to consider in this advanced stage of orthodontia.

One of these comes under the head of Newton's third law of motion, which is: "To every action there is always an equal and contrary reaction; or the mutual actions of any two bodies are always equal and oppositely directed."

The word "action" as is used here may signify *pressure*, *quantity of motion*, *or energy*, of any kind, *potential* or *kinetic*.

Whatever the pressure of a certain force in any given direction, it can never exceed the action of the force in an opposite direction.

When the direction is rectilinear—or in a straight line between two points of application, as the push and pull force of a screw, the power exerted at one point is never more than that exerted at the other; the combined action being always equal to the motive force expended in setting the screw in motion.

To one who has given little thought to this subject, it is difficult to eradicate the idea of computing force in terms of work, and often at first thought will be led to interpret this law as meaning, that in the accomplishment of any action of force in one direction, only one-half the magnitude of power can be utilized—since the other half must be expended in an opposite direction.

For instance, if a screw possessing a 100 pounds pressure has an attachment at one end that is absolutely immovable or sufficiently inert as not to be moved by a 100 pounds of force, while at the other it yields to the force in a way to indicate the exact amount of pressure received, we will find that the entire force of the screw is registered at the kinetic attachment, and will continue to be exerted until it has accomplished the full 100 pounds of work—barring friction, etc. If it is in the raising of a weight, or in pushing a spring scale which registers 100 pounds of force in that direction—and, according to the law, if it exerts an equal pressure in an opposite direction—one is inclined to imagine that 200 pounds of power is in use.

In the example cited none of the original force has been transferred from the screw and expended apart from it in work, but instead it has merely piled up at one end in the form of potential force, still exerting its 100 pounds of pressure upon the static anchorage at the other end of the screw, since it requires 100 pounds of pressure to hold the scale at that point. If now we substitute a second scale in place of the anchorage attachment, it will register but fifty pounds. That is fifty pounds of the original 100 pounds of power will be transferred from the first scale and go into a form of work in raising the second scale to an equal and opposite potential force, when the two will be brought to equilibrium.

This consideration is important practically in the movement of teeth with a screw, and teaches that whatever power we put into the screw, while equal and opposite pressure or force is exerted at both ends, the power is transferred and expended in a movement of the malposed teeth in proportion to the inertia of our anchorage attachment.

This rule would not hold true with the use of elastic or continuous force, though the inertia of anchorage attachment or the utilizing of the opposing force is quite as important for other reasons.

By examining the forces of a "lever of the first order," we will find that "action," in the form of pressure at the point of work, or weight, is never equal to the pressure at the fulcrum, the difference being always equal to the immediate pressure at the point of power, regulated by the relative lengths of the arms.

As an example: The arm of a steel-yard, or any balance scale, is the long and short arm of a lever, and its point of suspension is the fulcrum. When the arm is brought to equilibrium the down-pull or force exerted at the fulcrum—without counting the weight of the machine itself—must always equal the sum of the weights of the mass that is being weighed and the counterpoise or power.

In computing the forces of ordinary machines, little thought is given to action beyond points of power and work, because the *reaction* to the working force is sustained without loss of power or harmful influence by the foundation and superstructure; or the inertia of the machine itself.

In this particular it differs vitally from a dental regulating machine which possesses possibilities that cannot be computed in like manner from a basis of easily acquired inertia to act as an extraneous rest or anchorage to working forces, else as few difficulties would be presented to us as would have been to Archimedes had he found a base upon which to rest his lever.

In the proposition for regulating malposed teeth, the machine is suspended, as it were, in mid air, where all the motive force supplied by the operator is exerted in .opposing directions upon immediate vital environments; and therefore it is quite as important for us to care for, and direct, the force of reaction, as it is that of the desired action.

My object in presenting this somewhat lengthy introduction to the subject of this paper is to draw your attention sharply to the importance of that force which must always be exerted in an opposite direction to every working force, that you may fully appreciate the desirability in orthodontia of taking advantage of every opportunity whereby it may be redirected as a reciprocating force to needful channels of work, instead of allowing it to be expended in useless or harmful tendencies.

For years a plate fitted to the teeth, covering a portion of the mucous membrane and commonly the roof of the mouth, was used as a base to receive this opposing force, with a view of distributing it over so broad a surface that it was not equal at any point, to the inherent inertia of the part. Now, that regulating plates have been relegated to the past—for reasons I need not mention here—the principal aim of the modern constructor of regulating appliances is to either distribute this opposing force to a number of teeth, or, by virtue of methods of attachment, to the roots and alveolus in which they are imbedded, or—what is of most importance—by neutralizing it at points of anchorage by an equilibrating force in an opposite direction, for the movement of other malposed teeth.

In proportion as two opposing working forces can be made to reciprocate each other, the motive power of the apparatus or machine is expended at points of work and neutralize at points of anchorage.

This, I believe, to be the most important and scientific consideration in the construction of dental regulating appliances. Those who have had little experience in this department with modern methods can hardly appreciate the importance of taking full advantage of this principle in the management of mechanical force, or realize the variety of opportunities for its exhibition that will be presented to a thoughtful and ingenious mind. During the era of regulating plates little thought was given to this phase of our subject. And even to-day, unfortunately, it is not uncommon to see two or more jack or traction screws, springs and bands with opposing or anchorage force centered upon a single plate; where with a much simpler and more effective device, both the plate and the expenditure of this surplus force could be avoided.

Not so very many years ago it was the common custom in carrying a grist to mill, to balance it upon the horse with a stone in one end of the bag; and I suppose the man who suggested the idea of parting the grist, getting rid of the stone and one-half the weight, was considered by that portion of the community who are always loath to leave a beaten rut, as much of a crank as men will always be considered who are a little in advance of the times.

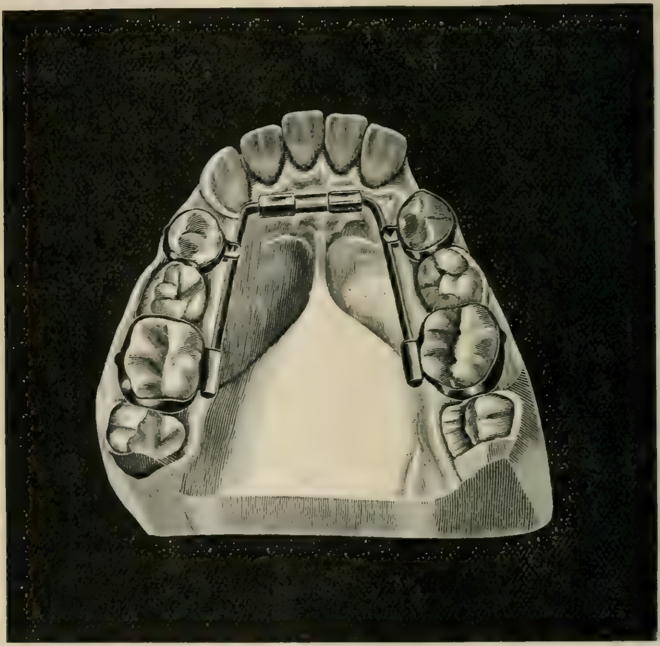


FIGURE 1.

In attempting to classify the simple forms of irregularity of the teeth where reciprocation of applied force is always indicated, I may mention: First, instances where two teeth near each other in the arch, or on opposite sides of the same jaw, require to be forced in opposite directions. When the teeth so placed require an unequal force to bring them to position, the inequality may often be neutralized (1) by a difference in the relative points of applying the force; (2) by so constructing the appliance to obtain an unequal distribution of it, and (3) by an arrangement for transmitting the surplus force to a static anchorage, or to other teeth which require to be moved.

In the proposition for making one malposed tooth move another (if I may so state this principle of reciprocation), where both are posterior teeth on opposite sides of the jaw—and especially if they are inferior teeth—the employment of a screw for reciprocating the two forces has heretofore been considered inadvisable on account of interference with the tongue, speech, and mastication. This difficulty may be obviated by using a right and left jackscrew, so constructed that the body of the screw rests just back of the anterior teeth, while rigid arms extending from its ends are bent back to the points of application. (See Fig. 1.)

In the operation of expanding or contracting the dental arch, this implement will be found invaluable in many instances where the force of a spring is out of the question. As it has never been published, I will here describe an easy method of constructing it—without a lathe—according to mechanically correct principles; for upon this will depend its practicability.

As the body of the screw in applying the jack or traction force is made to turn upon the threaded ends of the arms, any deviation from a direct line in these two screws would cause a wabbling and detract to that extent from the ease of its management, and also endanger the loosening of the bands.

In constructing a dozen or more of these instruments, three German silver tubes, about six inches long, should be drawn. The first one should be made of plate (No. 26 B. and S.g.) and drawn to the proper size for threading it internally with a tap cut in the No. 4 or 3 hole of the Martin screw plate. The second and third tubes are made of plate (No. 30 B. and S.g.) the one drawn to exactly fit outside the first tube, and the other, or third, to fit inside of the second. You are now equipped with material for making the bodies for reciprocating jackscrews of different lengths.

The first tube you will cut into pieces one-eighth or one-tenth of an inch long (see first Fig. 2); the second into pieces one-fourth of an inch long (see second Fig. 2), and the third into pieces varying in length from one-fourth to three-fourths of an inch; in proportion as you wish to vary the length of the instrument (see third Fig. 2). The first pieces cut are fitted into one end of the second pieces and two of the pieces so fitted are slipped on to the ends of the third pieces, and so arranged that the joints of the tubes shall not fall into juxtaposition. When these are soldered together you have a series of compound tubes, having short portions at the ends with an internal diameter less than the central portions, and absolutely rectilinear, to be threaded for the right and left screw arms. The enlarged end pieces are finished on the outside the same as nuts, and so cut that they can be grasped by the wrench at one end or the other at every eighth turn.

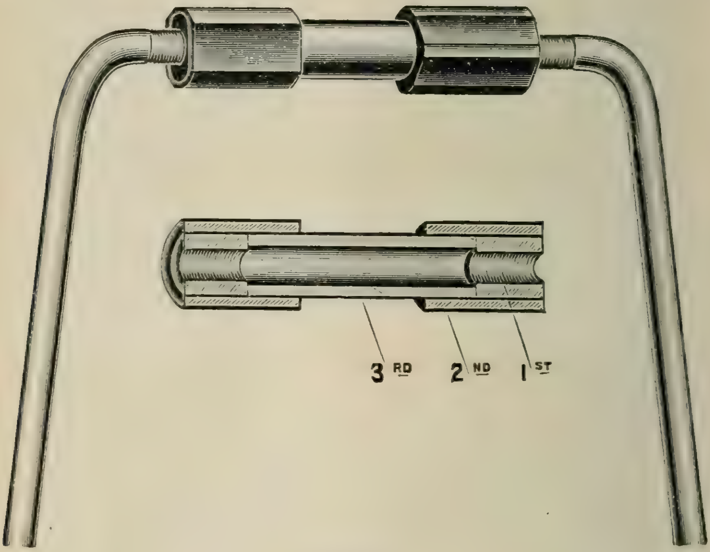


FIGURE 2.

The second simple form of irregularity where reciprocation of force is indicated, is where two approximal teeth are standing, the one within and the other without alignment in the dental arch. Here the two opposing forces can be made to reciprocate each other to the neutralization of anchorage force until one or both are in proper place. In the *Cosmos* for April, 1890, is published a very effective instrument for this work, which I named the "Reciprocating Jack and Traction Screw." Later I added to it an improvement for transferring the surplus force to a static anchorage, which was published in the Dental Review for August, 1892.

Drs. Farrar and Angle have presented a number of ingenious appliances for these cases.

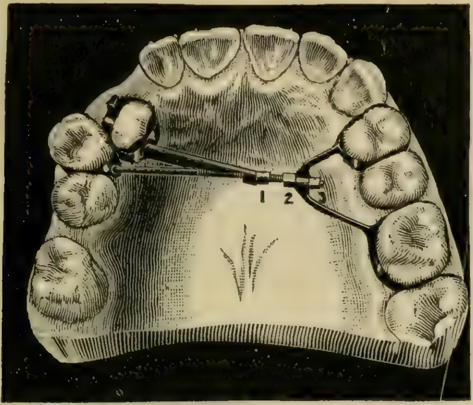


Figure 3.

Third. In simple torsion force perfect reciprocation can be obtained with the jack and traction screw mentioned above. The screw bar is rolled to a thin ribbon and buttoned to one side of the tooth, while the body or tube of the instrument rests upon a flexible pin on the other side of the same tooth. (See Fig. 3.)

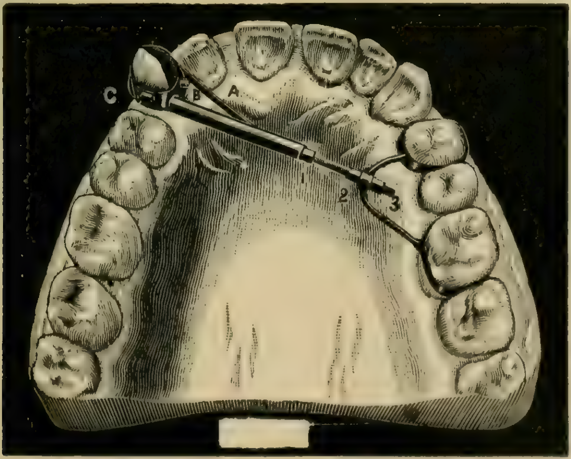


Figure 4.

This is the only instance that I know where the force of torsion is all expended in work tending to rotate the tooth upon its long axis.

When Dr. Angle introduced the spring bar or wire for applying torsion force, I opposed it because I found when both ends of the bar were sprung into pipes for rotating two teeth, and even where the long arm of the lever was held by an anchorage tube, there was produced so much friction at these points that instead of the bar freely gliding in the tubes as the rotating tooth or teeth turned, they acted more or less as immovable attachments with a tendency of forcing the teeth in the direction of the straightening ends of the bar, making it a dangerous method to employ in any case which cannot be seen often, unless this tendency of the force is otherwise controlled.

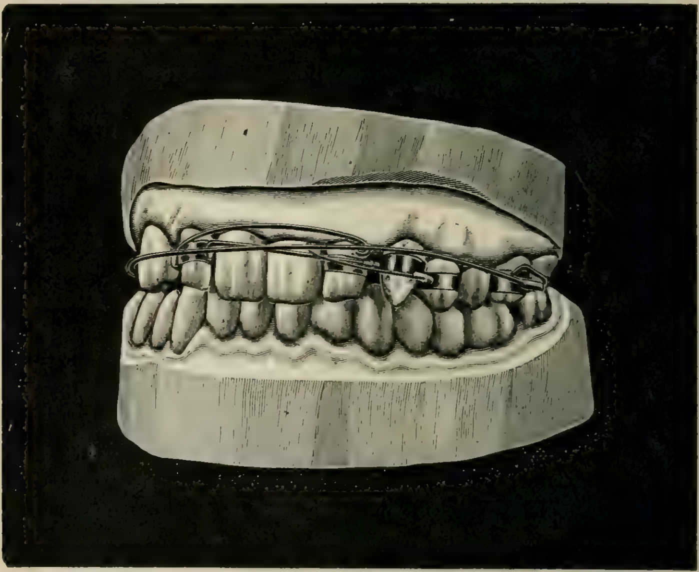


FIGURE 5.

I am happy to say now that this principle of force is correct, and when properly controlled, as I shall describe, is one that I employ quite extensively.

In nearly all cases of irregularity of the teeth, and especially when two or more teeth require rotating, I enclose the dental arch with an almost invisible wire extending from anchorage attachments at the molars. This wire, which commonly bears a screw at one end, is drawn from a much larger German silver wire, and becomes highly flexible and polished. To this the ends of the torsion wires are hooked with so little friction that they easily glide along its smooth surface as the teeth rotate to place. Again, any tendency of the rotating tooth to be forced out of alignment is controlled by the encircling wire. Here the force exerted in confining the potential power of the spring lever, is transmitted to the encircling wire and converted partly into a force for holding the *teeth in alignment*. (See Fig. 5.)

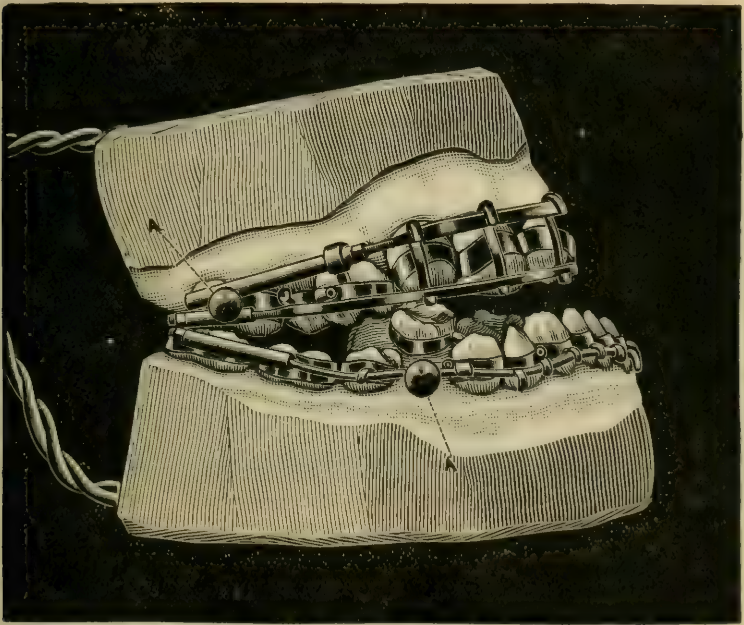


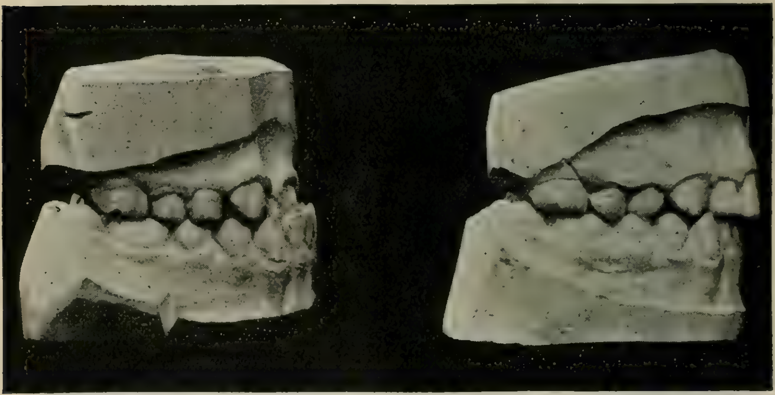
FIGURE 6.

Fourth. I shall not attempt to enumerate the great variety of instances which constantly arise in the practice of orthodontia where that portion of the motive power that is commonly sustained by a static anchorage, or by teeth which should not be moved, may be wholly or in part neutralized by diverting it to other and useful purposes.

Instances often arise where, after a prolonged study of the models of a case preparatory to constructing regulating appliances, the discovery of this possibility is as unexpected as it is pleasing and of practical advantage; for there is no mechanism where the problem of utilizing power and converting it, without loss, into working force, is of more vital importance than that for the regulation of malposed teeth.

In those operations which have from time to time been brought to your notice, where I have succeeded in moving the roots of teeth and the contiguous bone, for the purpose principally of giving a more perfect contour to the face, the success of the operation depended mainly upon the possibilities of reciprocation, to neutralize at points of anchorage, the great force necessary in accomplishing the object.

Miss B., æt. 12.

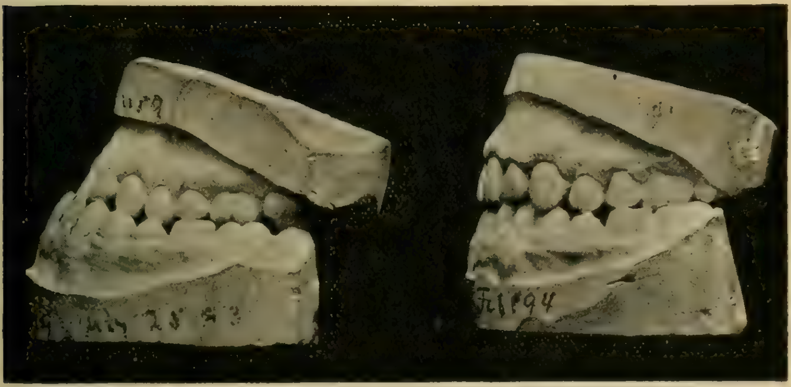


Nov. 29, 1892. FIGURE 7. June 3, 1893.

Though the bars for producing the required movement extended from molar anchorage attachments, the pushing force of one was reciprocated by the pulling force of the other to the full extent of the force expended in keeping the teeth in an upright position, or in moving the roots or the crowns more rapidly as the case demanded. Again, instead of allowing all that portion of the force in excess of equilibrium to be sustained by the anchorage, it was further reciprocated—in nearly every instance—by the use of rubber bands which extended to a bar firmly attached to all the teeth of the lower jaw. The employment of rubber bands extending from one jaw to the other is among the principal means of reciprocating force. "*A*" "*A*," Fig. 6, are the buttons to which the rubber bands in this case were attached. When the anterior superior teeth require to be moved back in the dental arch, the inferior often require to be moved forward, and vice versa; the force required for one may in this way be reciprocated to the extent of the magnitude of force in the rubber bands employed.

If one will carefully examine the models of these cases, or the half tone illustrations of the models, which will appear in the published proceedings of the World's Columbian Dental Congress, illustrating a paper entiled, "Some Thoughts Relative to Face Contouring," they will find little or no antero-posterior alteration in the occlusion of the posterior teeth, which were used for the anchorage attachments, which conclusively shows that the anchorage force upon these teeth was largely neutralized by reciprocating the great power which the apparatus must have exerted in moving not only the roots of the anterior teeth, but the entire bony structure in which they were imbedded. In two cases reported, the ends of the roots and contiguous bone were moved forward at least one-quarter of an inch with little or no posterior movement of the anchorage molars. (See Figs. 7 and 8.)

Miss E, æt. 14.



June 25, 1893. FIGURE 8. Feb. 1, 1894.

OPERATIVE TECHNICS.

BY THOMAS E. WEEKS, D. D. S., MINNEAPOLIS, MINN.

CONTINUED FROM JULY REVIEW, PAGE 529.

PULP TREATMENT. CONSERVATIVE AND RADICAL.

Conservative treatment: The points to be considered first are the form, location, and environment of the pulp; its composition and structure; its function and relations to the dentine; the conditions to which it is sensitive; its natural protection and its behavior when this natural protection is lost, and its behavior under artificial protection. The cutting of sections and printing of silhouettes gives the student the best opportunity possible for becoming familiar with the form, location and environment of the pulp. The pages of his printing book, of which Fig. 6 is an example, furnish a record which is an ever ready reference. They show that the outline of the pulp chamber, which defines the form of the pulp itself, follows the outline of the teeth in a general way. They show also the location of the pulp in the tooth and that it is surrounded by unyielding walls; imprisoned in a cell of solid masonry. This information the student must possess if he is to prepare cavities intelligently and avoid accidental exposures. In his histological and embryological studies he learns that the pulp is composed of connective tissue, richly supplied with nerves and blood vessels; that it has no lymphatic system; that its outer layer or coat, the membrana eboris, is composed of odontoblastic cells, columnar or pear shaped in form, having processes which fill the dentinal tubuli, and others which anastomose with other cells; that these cells are composed of protoplasm, which is sensitive to heat, cold, touch, and various chemical substances; that the terminals of the nerves of the pulp are among these cells; that the pulp is the formative organ of the tooth, its function being to build dentine, which function ceases when the tooth is complete; however, under certain conditions it is reawakened. He learns also that the pulp, protected as it is from contact of all kinds, is normally sensitive only to heat or cold, and that because of the nonconducting power of enamel, it is protected from all other changes, to which the teeth are usually subjected, when the enamel is intact.

He learns from pathology that when enamel, which furnishes the natural protection to the pulp and its processes in the dentine, is lost, changes in the pulp take place. That such loss of tissue results in irritation to the pulp. When this loss of enamel is slight, the slight irritation consequent, stimulates the activity of the odontoblastic cells, causing them to deposit calcareous matter, secondary dentine, within the pulp chamber, at the point nearest the loss of tissue. The second effect of irritation following greater loss of protective tissue, is hyperæmia; the result of this is likely to be a deposit of unattached calcareous matter within the pulp in the form of pulp nodules. The result of continued or increased irritation is inflammation, which if not arrested will result in death of the pulp.

Clinical observation teaches that when the materials used to replace lost tissue do not protect the pulp from the ordinary thermal changes to which the teeth are subjected, the same results follow the various degrees of irritation as when no restoration has been made.

The following summary is deduced from these facts. The pulp, properly speaking, is not confined to the pulp chamber and canals, because of the processes of the odontoblastic cells which penetrate the dentine to its periphery. It is not sensitive to ordinary temperature when protected by the normal thickness of enamel, but becomes sensitive in proportion to the loss of this protection. When the enamel is entirely gone at any point, the exposed dentine is sensitive to all the conditions to which protoplasm is sensitive. Pain may occur and inflammation of the pulp ensue, through its fibrillæ or odontoblastic processes, without actual exposure of the pulp. The natural protection of the pulp, when lost, should be restored by such substances as will most nearly fulfill the office of the normal protection.

The conservative treatment of the pulp will be considered under two separate heads, pulp protection and pulp capping. Pulp protection refers to the practice of placing some nonconducting substance between the bottom or axial wall of the cavity and the filling proper, in those cases where there is no exposure of the pulp. The term "intermediate" will be adopted to designate such nonconducting substance. Where decay progresses slowly, changes undoubtedly occur in the pulp which lessen its normal sensitiveness, the result of the effort which nature always makes to repel disease. On this account protection is not always necessary, but in cases where pain results from changes in temperature while preparing the cavity, an "intermediate" should precede the filling. It may be well to consider the much discussed point of leaving affected dentine as a protection to the pulp, rather than to remove it at the risk of making an exposure. All cavities of decay are infected. Semidecalcified dentine which appears normal to the eye may be penetrated by the microörganisms of decay. Such dentine may be so treated as to arrest the further progress of the affection. This is accomplished by sterilizing the affected dentine. Hence we conclude that partially decalcified dentine may be left as a protection to the pulp *if it be perfectly sterilized.* The student, however, should not be misled by this statement, and leave dentine which is badly disorganized in any part of a cavity. He should also be sure that whatever germicide is employed is left for a sufficient length of time to sterilize *all* of the affected dentine. It is in fact good surgery to sterilize *all* cavities of decay.

The chief requisite in a material for pulp protection is that it is a nonconductor. The two materials which possess this quality to the fullest extent are gutta-percha and asbestos. Gutta-percha is cut in the form of a wafer of sufficient thickness for the case in hand, large enough to cover the floor or axial wall of the cavity, warmed, carried to place and fixed in position with a warm burnisher. Asbestos is used by cutting a piece of the paper to correct size, and fixing it in position with thin oxyphosphate or chloro-percha.

Pulp capping is the term applied to operations for the conservation of exposed pulps. Exposures are of two kinds, which we will term surgical and natural. Surgical exposures are either accidental, as when the horn of an abnormal pulp is penetrated, or intentional, as when partially disorganized dentine is removed. Natural exposures are those where the pulp chamber is penetrated by decay before the case comes under observation. In surgical exposures, inflammation is seldom present, while in natural ones it usually is. It is sufficient for present purposes to state that pulps which are inflamed in any degree are not promising subjects for pulp capping. If a pulp which is exposed is to retain its vitality, it must be protected from irritation by pressure, from contact with any irritant, and from thermal changes ; consequently a material for pulp capping must be one which is nonirritant to pulp tissue ; one which can be applied without pressure, which will also protect the pulp from pressure, and one which is a nonconductor. Without discussing the merits of the numerous methods and materials, we will select the two substances used as pulp protectors, adding the oxysulphate of zinc, or some of the similar preparations in which the oxide of zinc is combined with some nonirritant liquid to form a mass which will become sufficiently hard for the location in which it is to be placed. Where cavities are so shallow that the capping cannot be protected by a thin layer of cement, from the pressure caused by the insertion of a metallic filling, concave caps of thin metal may be employed to furnish this protection.

PRACTICAL EXERCISES.

These exercises are all upon teeth in the dummy articulator.

PULP PROTECTION.

Exercise 1. In the occlusal surface of a molar, select a cavity which is sufficiently deep to allow of an "intermediate." Prepare and sterilize; make wafer of gutta-percha, pink base plate, of the proper size and thickness; soften over heater (see *gutta-percha*, chapter on filling materials) carry to place with warm burnisher, carefully pressing it in position with same instrument. The burnishers shown in Fig. 150 or 151 will serve.

Exercise 2. In an incisor or bicuspid, select, prepare and sterilize a cavity of class 2 or 3 which is too shallow to allow of as bulky an "intermediate" as gutta-percha. Cut a piece of asbestos felt the proper shape and size to cover the axial wall of the cavity; mix some oxyphosphate thin, coat one side of the asbestos with this, and carry it to position, pressing it slightly to insure adhesion. This exercise may be varied by using chloropercha instead of oxyphosphate.

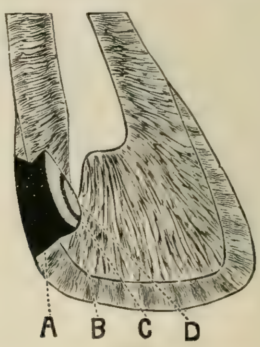
PULP CAPPING.

Exercise 3. In a bicuspid or molar, select, prepare and sterilize a deep cavity in which the pulp chamber is slightly penetrated. Cut a piece of asbestos felt of proper size and shape; coat one side with chloropercha and carefully slide it into position, avoiding any pressure. Lightly press the edges with a small burnisher. After allowing it to dry, insert an "intermediate" of oxyphosphate, mixed thin enough to avoid pressure.

Exercise 4. On the mesial or distal surface of an incisor or bicuspid, select, prepare and sterilize a shallow cavity in which the pulp may be readily exposed. Strike up a concave cap of thin metal, cutting it to the proper size and shape to cover fully the point of exposure. Coat its concave surface with oxysulphate of zinc, or Dickinson's protector and slide it into position. If space will permit, the cap may be lined with gutta-percha before applying the oxysulphate. Where protective caps are necessary, they may be easily made of vulcanite, which is an excellent nonconductor. In these exercises other materials may be employed at the option of the teacher; the methods are much the same for all materials. The chief point is to *avoid pressure.*

RADICAL TREATMENT.

Surgical devitalization. While the ancient custom of extirpating the pulp with the actual cautery has been abandoned, it is frequently desirable to remove pulps without waiting for the slower method of devitalizing with drugs. The fact that uninflamed pulps are not sensitive at the moment of their exposure, when such exposure is sudden, is taken advantage of by some operators when preparing teeth with healthy pulps, for porcelain crowns. The tooth is girdled with a sharp groove close to the gingival border; is cut off with excising forceps, and the pulp removed *instantly* with a barbed broach or by driving in and immediately withdrawing a hickory or orangewood point having a long taper. While this method is comparatively painless and is practicable for those teeth whose crowns are to be replaced by porcelain ones, it is not applicable to those teeth whose crowns are to be retained and filled. In rare instances pulps may be removed surgically, without pain, after being freely exposed, but the irrita-



230

D shows the oxysulphate. C shows the metal or asbestos cap. B shows the intermediate, and A the filling.

tion attendant upon the exposure of the pulp is usually sufficient to awaken and increase the sensitiveness of the pulp and there is no shock to obtund this sensitiveness, as there is in the excision of a tooth.

In those cases where the necessities of the case or the judgment of the operator indicate the surgical removal of a pulp, the cavity should be deepened as much as possible without pain. In those cases where local anæsthesia proves inefficient, general anæsthesia may be resorted to, or the operation may be performed during the first or second stages of anæsthesia by ether, chloroform, or the A. C. E. mixture. Burs, broaches and all instruments should be in readiness so that the pulp may be exposed and removed expeditiously. Thus far we have considered only those cases where there was no natural exposure, or at least those where there was no degree of inflammation. Pulps which are inflamed ever so slightly are too sensitive to permit of their surgical removal without anæsthesia, either local or general. In many cases of actual exposure the pulp may be sufficiently anæsthetized, by the application and injection of a strong solution of cocaine, to permit of its painless removal. The author has removed pulps painlessly by the use of a twelve per cent solution of cocaine in carbolic acid two per cent, causing the cocaine to act upon the pulp by electrolysis. The method is to place the negative pole of the galvanic battery, which terminates in a small pad moistened with saline water, upon the gum over the tooth to be operated upon; place in the cavity, upon a pledget of cotton moistened with the cocaine solution, the positive pole, whose terminal is a platinum point. The current, a continuous one, should be applied gradually and at no time should it be strong enough to be unpleasant to the patient.* Aside from the lack of time in which to extirpate a pulp by the application of drugs, the argument for surgical devitalization is that it avoids the pain frequently present during the action of the drug, and is less likely to excite inflammation in the apical region. Surgical removal of the pulp should never be attempted until direct access, as nearly on a line with the axis of the principal canal as possible, is obtained and an opening made into the pulp chamber of sufficient size to permit of the removal of the pulp.

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*This method was published in the DENTAL REVIEW, Vol. III, page 169, by Dr. D. F. McGraw.

Devitalization by drugs. The drugs used in devitalizing pulps are usually escharotic. Those generally employed are arsenious acid, carbolic acid, and chloride of zinc. Arsenious acid is in a sense escharotic, but it acts by directly destroying life; it kills the pulp by irritation, increases the flow of blood to the parts, enlarges the arteries, prevents the return of blood to the veins, thus causing strangulation. Carbolic acid, like other true escharotics, acts by combining with albumen, producing decomposition of the part and forming an eschar. It is somewhat self-limiting and requires repeated applications. Chloride of zinc is also a true escharotic; owing to its great affinity for water and its power of combination with albumen, it penetrates deeply. Many other agents, such as dilute hydrochloric, nitric and chromic acids are sometimes employed, but they will not be further considered. None of the agents used accomplish the object painlessly without previous treatment by, or combination with some anodyne or obtundent.

As arsenious acid, or cobalt, which contains arsenic, are the chief " potential cauterants " used in devitalizing pulps, our attention will be confined to it. On account of its destructive action upon vital tissue, *it must be confined in the cavity;* if allowed to come in contact with the soft tissues surrounding the tooth, it will cause violent inflammation, and may result in necrosis of the alveolar process. It should never have a surplus of the liquid with which it is mixed, for the pressure of inserting whatever substance is used to retain it in the cavity, may squeeze it out, carrying with it sufficient arsenic to do mischief. As the chief action of arsenic upon inflamed pulp tissue will be to cause severe pain, it must not be applied until inflammation is reduced. As deciduous teeth and permanent ones in the mouths of very young persons have large foramina it is unsafe to employ arsenic as a devitalizing agent. It is wiser to destroy such pulps by the slower means of cabolic acid crystals. The length of time that arsenic should remain in a cavity is a disputed point. It accomplishes its purpose in from three to twelve hours, depending upon the structure of the teeth, the idiosyncrasies of the individual, and whether the pulp has been freely exposed; hence there seems to be nothing gained by leaving it longer than twenty-four hours. Again, should the pulp be removed at once, or should it remain until the pulp is ready to slough? It is claimed that because of the penetration of the tubuli by the processes of the innumerable odontoblastic cells of the pulp, if attempts are made to remove the pulp before it is ready to slough; that patches of the membrana eboris may remain. We will say that the pulp should be removed before it reaches the early stages of putrescence, and that the success of the subsequent operations depends much upon the removal of *all* of the pulp.

As our only object is to give the student sufficient data to enable him to perform the practical operations intelligently, the subject will not be pursued further. The knowledge and judgment necessary to enable the student to differentiate in his prognosis, cannot be obtained until he has clinical experience; hence the teaching in the technic laboratory should be confined to those points which will aid him in his work there.

PRACTICAL EXERCISES.

Surgical devitalization. The exercises under canal treatment have given employment for the same instruments, and in much the same manner as they are used in surgical removal of the pulp, and as the conditions found in vital teeth can only be imagined in dried ones, the practical instruction under this head may be confined to demonstrations by the teacher.

DEVITALIZING BY DRUGS.

Exercise 1. Select a cavity in which there is exposure of the pulp; moisten $\frac{1}{40}$ grain of arsenious acid with oil of cloves; apply the mixture to the concave surface of a metal cap, prepared as in exercise 4, pulp capping, and carry the cap to position over the exposure. Fill the cavity with low grade gutta-percha. At the next meeting of the class, remove the filling and cap; wash the cavity thoroughly; apply tannin and glycerine on a small pledget of cotton; refill the cavity with gutta-percha, and let it remain for one week. At the expiration of that time remove the pulp and proceed as in practical exercises under canal filling.

Exercise 2. In another cavity apply the arsenic and oil of cloves on a minute pledget of cotton or on a bit of asbestos paper, protecting it and sealing it in the cavity with cotton moistened with sandarac varnish. At the next meeting of the class, remove application, extract the pulp, and fill at once. The time is specified in these exercises merely to impress these things upon the mind of the student. He should also be impressed with the importance of excluding the saliva during all these operations.

(TO BE CONTINUED.)

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A SUMMER VACATION.

There are few callings the constant pursuit of which entails on the individual so severe a tax mentally and physically as does dentistry. Volumes might be written—possibly have been written—on the various agencies and conditions which combine to make dentistry an exacting pursuit. All dentists would probably admit the facts in the case, and yet how few act as if they really believed what they are willing to admit. How many dentists take sufficient recreation to renew the surplus energy expended at the chair? How many manage by a proper regulation of these matters to preserve a healthy mental and physical balance from year to year? How many reach a vigorous old age minus the penalties meted out to those who ignore the inexorable law of waste and repair? We have too many prematurely old men in dentistry. Some day, if we keep on, we shall aptly be styled the profession of decrepits.

There is only one way—one sure way—for a man in full practice to maintain his vigor, and that is by an occasional surcease of the petty cares and worries of practice, in a complete change of environment. It will not do simply to go the theater of an evening, or visit the bowling alley, or train in a gymnasium. Excellent as these may be in their way, there is something else required to give a man that "new lease of life" which we all so much desire. No man may remain in the town or city where his practice is conducted and expect to get complete recreation even though he closes his office and "takes a week off."

To those in need of rest we would say that the thing to do is to get away from it all, get away as far as possible, so that the atmosphere of the office cannot follow you. Go out into the woods and get acquainted with nature. Let humanity alone for a time. Find some spot if possible where miserable man has not defiled the face of his universal mother. Go where the ax and spade have never been; where the birds sing freely and fearlessly among the branches over your head; where the fawn and doe stand and stare at you with great soft eyes, wondering what you are; where the streams gurgle with perpetual music over tiny pebbles and among the roots of trees. Go where the morning sunlight bursts upon you with a warm salute; where the noonday rays sift down among the many tinted leaves and quiver at your feet; where the sunset sheds a rosy halo that falls about you like a benediction. Go where earth and air, and bird and blossom, and flower and foliage, all speak of the morning of the world. Get away from civilization. Leave the noise and din of the city behind, the ceaseless turmoil, the clatter of the pavements, the clang of bells, the screech of whistles, the smell of smoke, the interminable, nerve straining, mind racking, soul disturbing struggle after the dingy dollar. Get away from it all. Go out into the mountains and rub up against nature. Climb the side of some lofty peak, and placing your hand, your pigmy hand, against its broad breast look up into its majestic countenance and commune with it. Ah! Well may Byron have written, "To me high mountains are a feeling." All nature is a "feeling" to those who seek to study nature's moods. The gray mist of a morning creeping slowly upward into nothingness from the lowlands, the glint of moonlight or sunlight across the crests of tiny wavelets dancing on the surface of ocean, lake or stream, the soft sighing or sudden sweep of the wind through the woods and over the water, the tremendous roar of the coming storm breaking through the branches of dead trees or sending the leaves of the living ones into a flurry of consternation at its rude approach, the gentle whispering of the zephyr, the rustle of leaves, the perfume of flowers, the lapping of waves, the flash of lightning, the boom of thunder, or the soft pattering of rain drops on the side of a grassy slope, all bear a message to the man endowed with interpretation.

And to you, you dentist of debilitated constitution—but there, this recalls the fact that we have been writing the while for a dental journal. We had well nigh forgotten it. Ah, well, lackaday, we are sometimes led to regret that it were not considered seemly to put more of the poetry of life into our professional literature.

THE NEW JERSEY STATE DENTAL SOCIETY.

The recent annual meeting of this society held at Asbury Park was a pronounced success. The New Jersey men know how to conduct a dental society, and this meeting was a credit to them. Punctuality in all things was the order of the day. If a session was announced for 8 o'clock, the gavel sounded promptly at the last stroke of the clock whether there were a dozen members in attendance or not, or whether a single essayist was on hand. This is an example for all societies. If this custom were made the rule with all of us what a saving of time it would bring about. In most societies the practice of fixing a time for opening a session is a farce. It is a happy-go-lucky sort of process which results in the meeting being called to order when the crowd comes—and the crowd usually comes whenever it pleases its own good self. We commend to the consideration of officers of societies the vigorous methods of the New Jersey contingent.

Asbury Park seems a most delightful spot for a meeting and the attendance this year was large. The best of good fellowship prevailed, and to say that the members of the society exerted themselves to entertain their visitors would be putting it altogether too lightly. The New Jersey men have the reputation of being natural born entertainers, and this meeting has added vastly to the record. Nor did the scientific feature of the meeting suffer. The proceedings when published will make good reading well worthy of perusal.

Altogether it was a meeting to do one's heart good to attend, and in itself was enough to put to rout the queery springing up here and there, "Are our associations satisfactory ?"

THE USE OF PROPER TERMS.

If dentistry is a professional pursuit, dental services cannot correctly be designated as "doing a *job* of dental work." If the pericementum exists on the root of a tooth the cementum is nourished—a pulpless tooth therefore is not a "dead" tooth. Dead teeth do not remain long in the mouth—they are cast off as foreign matter. The first permanent molar does not always erupt at six years of age, nor the second at twelve years—they are therefore not properly called "sixth year," or "twelfth year" molars. The cuspid teeth have little connection with the eyes, with dogs, or with the tissues lying immediately beneath the diaphragm—there is little logic then in calling them "eye" teeth, "canine" teeth, or "stomach" teeth. The third molar—more's the pity—does not always make its possessor wise—then why not discard the term "wisdom" tooth? An alveolar abscess has little in common with an ulcer—why say "ulcerated" tooth? There are few fillings composed entirely of silver—why should we call an amalgam filling a "silver" filling?

The list might be almost indefinitely prolonged, but the foregoing illustrations are sufficient to show the tenor of our argument, which is, that the profession should be more careful in its use of terms. Old ideas are fast passing away and old terms—especially such as are improper, misleading or ridiculous—should be allowed to pass away with them. The profession—at least the larger part of it—are exceedingly lax in the use of terms and phrases, and while we are not at this time urging the acceptance of any one system of nomenclature we make a plea for the suppression of all terms so manifestly obsolete as some of these we have just quoted. Too many of them are yet creeping into our literature, many more are killed on their passage from the written page to the printed page, and when we come to the ordinary conversation among the rank and file of the profession we find it filled to the spilling point with these fossilized absurdities. It requires only a little discipline on the part of our writers and speakers to remedy this evil. It is time the evil was remedied.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

NEW YORK, July, 1894.

To the Editor of the Dental Review:

99° in the shade. No appointments! Door plates tarnished. We queried "what about stuff for our August letter?" Professional wind was nil. Standing on a corner we noticed all eyes turned upward. Surely there were two fellows in a balloon just over Newark putting a flash kodak on the Jersey hornets' last appearance before going to Asbury Park. Long live Jersey dentists. If they don't get to the front it will not be for lack of push. This balloon in the air gave us a hint, which we have acted upon. Securing a large supply of gas we decided to note things in the air from a high altitude. We got off quietly and struck the medium height for safety and smooth sailing. One finds one's self growing easily adjusted to the upper realms if one does not go up hastily. As the balloonists were subject to our supreme control we had things our own way. We were thoughtful in taking in a good supply of tubing of red gutta-percha. It was our purpose if all things favored us to connect with terra firma by the long distance telephone. A fair midsummer breeze carried us up Long Island Sound. Nothing out of the usual line attracted our attention until we discovered some big letters a little aslant in our vision. We spelled out B-r-i-d-g-e; and then we were puzzled and could not make it out. Our associates suggested that it was a bill board. Ah, we thought we had it. Bridge Work. We gave orders to catch on. We proposed to connect, being made fast. We dropped our tubing, and signaling, it caught the eye of a dentist. He had just been reading about the value of red gutta-percha in the late journals. Then his glance went up the tubing and he caught sight of us for the first time. All the while we had been helloing eagerly. We said, "Who are you?" "I am a dentist." "Oh, that's how you caught on so hastily. Anything new in bridge work?" "No, not this week so far, it is only Wednesday." "Who lives here beside you?" "Well, Barnum did live here." "Oh, oh, this is Bridgeport." "Yes." "How are the dentists of Bridgeport?" "I think some of them are off up the Connecticut river at a dental meeting, Holyoke—a big lay out advertised in all the papers in the immediate neighborhood. Only a few names appear in the notices.

None but members of other societies invited." "Well, we will have to let go." "Who are you?" "Quid Nunc from the Chicago DENTAL REVIEW." "Yes, I have heard of that journal before. Say, practice is awful dull in Bridgeport. Folks have got an idea because Barnum lived here that everything here is humbug. By the way don't you think he said a good deal of truth when he said the people liked to be humbugged?" "You are right. But let us give you a point." "All right, I'll take it." "You subscribe for at least two journals, read them the same month they are published, and if you can't say in a year, and truthfully, that you know that you are not a humbug we will get the publishers to put you on the free list for another year." "Thanks, I'll try it." "Good-bye."

If the wind favors we will steer for Holyoke. At 11:30 A. M. we are at New Haven—too much "wind" here for stopping. There is only one Gay-lord, in New Haven. He smiles any way you look at him. He has the largest practice and makes no noise. The only blowing he has ever engaged in was on a small scale; he invented a pneumatic mallet. It did not make much noise. Things have got to make a noise to get on these days. Good bye, New Haven.

The wind is still in our favor for we are going in a northwesterly direction, carrying us directly to our desired destination. We leave Hartford and Springfield on our right. The summit of Mount Tom and Holyoke are in sight and the Connecticut River appears like a silver thread in the valley. The landscape is like a painting such as no artist can paint. 1:10 P. M. We are over Holyoke. Again we found the wisdom of our selection of red gutta-percha tubing. We had dropped it down at our first approach and singularly as it may seem there chanced to be a stroller on the outskirts looking about and sniffing the air. What may seem more strange he was a veteran member of the Connecticut Valley Dental Association. Our tube swept across his face just as he caught a glimpse of our car in the air. In an instant there came an italicized salutation. "What are you doing with that red rubber tubing up there? I head the list for a paper at this meeting on gutta-percha for lining cavities." We said, "You are a dentist." "Yes." "You are the man we are looking for. Just lead us over the building where the meeting is being held and we will emphasize your paper. We are on a quiet call gathering anything we can in the way of dental news." "I have the points and I'll connect you with the lobby where you will be in direct communication with all that is going on." We inquired for Shepard. "Can't be here; is on a crutch with the gout and some symptoms of pyorrhœa. As soon as there can be an analysis made it will be announced through the State Society." On further inquiry we marveled that so many were absent. We were wiser before we left. We caught sound of an unfamiliar voice which proved to be that of Pres. Rider. (It was somewhat in the style of Rider Haggard, we thought.) That paper cost a good deal of gray matter. By the way, he is from Danbury, the home of the "Danbury News Man." He brought in a good deal which seemed enigmatic but his real advocacy was in behalf of lengthening the cords and strengthening the stakes. Pres. Rider showed the truth of what is so apparent through the country that but a small percentage of dentists are in societies. We see on the Pacific coast that out of four thousand only about three hundred attended the congress. These facts are suggestive. For a little we noticed a lull of interest in the lower altitudes. We helloed down to find out what was happening. Gathering clouds indicated a decided change in the atmosphere. We cannot reproduce what soon followed, for facial expressions add so much. Several were on the floor at the same time as the mingled voices told us. If it comes into the published proceedings it will bring quick blood in some bodies that providentially had been detained at home.

After this a letter from essayist Kirk was read which stated that he was threatened with pneumonia and could not be present. Also Victor Hugo Jackson sent a telegram "couldn't come," and we heard a sigh sweep over the body. Kirk could not give "Pulp Irritations," nor Jackson "Irregularities." This complicated things still worse and word soon came that the body had gone into executive session. Things looked so doubtful for further proceedings we signaled down to loosen us quietly so that we might take advantage of the gentle breeze to take us down the river. In twenty minutes we were over Springfield and as we were down so low we decided to drop upon terra firma. This being successfully accomplished we parted with our balloon proprietors and decided to spend a little time among former friends. Yankee dentists at this season of the year are more often in demand than in the larger cities. This we found to be true at this time. Dr. C. S. Hurlbut enjoys the lion's share of the confidence of the citizens of Western Massachusetts. He is one of five brothers, all educated for dental practice. Dr. Jared Hurlbut and himself only survive. Dentists in Springfield all occupy offices in public buildings. Dr. Jared Hurlbut has lately taken rooms in the new spacious Masonic Building. Dr. Stockwell at one time exhibited his superior ability as editor in connection with the *New England Dental Journal*, now extinct—the journal not the doctor. No journal ever had a more favorable prospect of usefulness. It was decidedly a journal of advanced views and it stands a discredit to New England dentists that it did not survive. Dr. Lester Noble, the veteran practitioner was at one time associated with the late Dr. Maynard, in Washington, D. C., a practitioner of superior ability. It was the testimony of Dr. Noble that convicted Prof. Webster, of Harvard University for the murder of Dr. Parkman. Dr. Noble made artificial teeth for Parkman and having the models preserved in his keeping he was able to show that the teeth found in the debris of the incinerated remains fitted these models. Dr. Noble while in Washington had many noted patients such as Webster, Charles Sumner and others. He was favored with much skill in the manufacture of artificial teeth. Some of our younger scions would marvel if they could examine these relics that bear proud testimony for some of the "old-timers.'' They could do some things that would baffle the boys, and vice versa, the boys can do some things that would stump the "way-backs." Home again. Note; in the discussion of Green Stain, in the July *Cosmos* at the New York State meeting, how a little light shines out in a very dark place. Dr. Palmer, of Syracuse, has a head on him. He deals with principles: they are the roadway of truth. Is Miller right? Listen for a moment what men say who can note only results calling them causes. They intimate that Miller, Andrews and such men cannot be right. Now see how plain Palmer makes it when he suggests the agent which does the whole business. What an illumination a little oxygen brings on the scene. Take in more oxygen gentlemen, you will live longer and to more purpose.

We met unexpectedly Dr. Wm. C. Horne, who had just returned from South America, finding the unsettled state of affairs disastrous to active practice. The doctor looks slightly older than thirty years ago when we first made his acquaintance. Dr. Horne was a factor in dental affairs in those days. For particulars we refer our readers to the back numbers of the *Cosmos*, where they will find Dr. Horne's finely written reports of the Society of all

Societies, the Brooklyn Dental Association. Its fame was widespread on this continent, and also in Europe. The fraternity that existed in this body was phenomenal and generated the same spirit in all its visitors, who were numerous at each monthly gathering. We learned a direct piece of information from Dr. Horne regarding the origin of the Odontological Society in New York. Dr. Horne was the founder of this body, copying the name from the British, and also their governmental laws. The first meeting ever held was in Dr. Horne's office in Twenty-sixth Street. The doctor says that Dr. C. E. Francis coöperated more cordially with him in this movement than any other dentist. These facts concerning the origin of this society are timely, as the credit has been given to more than one.

We are glad to note the very able paper by Prof. Sudduth in the July number of the *Cosmos*, on "Pyorrhœa Alveolaris." Hackneyed as this subject has grown, it is really refreshing to be brought face to face with a digest that shows some thought. We are not able to recognize the "catarrhal" aspect that the writer suggests, though others agree with him, Dr. Paterson for instance, of the *Western Dental Journal.* All readers will be profited by a careful perusal of Prof. Sudduth's article. He antagonizes Prof. Pierce's theory of the "uric acid diathesis." Dr. Osmun, of Newark, N. J., said some truthful things concerning this subject in his paper read before the New York State Society.

98° in the shade puts us all in a puddle of perspiration and our only hope is a $11 trip by the Old Dominion Steamship Company from New York to Old Point Comfort, and back, with $10 a week for board. All aboard. QUID NUNC.

LETTER FROM PROF. C. N. PIERCE.

To the Editor of the Dental Review:

Please allow me through your columns to thank Prof. Black for his late paper on "Diseases of the Peridental Membrane and the Uric Acid Diathesis." It adds much to the literature of the subject and will have good influence in helping to differentiate the abnormal conditions which have been so long grouped together under the title of "pyorrhœa alveolaris." Even since reading and re-reading this very able and exhaustive paper, the confidence in my previously asserted assumption has not been shaken. That the destructive and unyielding form of the disease, designated pyorrhœa, has its origin at or near the apical extremity of the root, recent as well as remote experience confirms. And that the disease having this origin, is closely allied to the gouty diathesis, is fully sustained by the fact that systemic and dietetic conditions which exhalt the recognized gouty conditions have a similar influence on this form of pyorrhœa. Also that constitutional treatment, whether it be through therapeutic agents or restricted diet, have a markedly favorable influence on the tissues surrounding such teeth, even to the extent of completely controlling the progress of the disease without the assistance of any local treatment. Nor must the fact be overlooked that patients who have been apparently relieved of all the concomitants attending this disease with which dentists are so familar, may renew the unfavorable symptoms by indulgence in eating or some other imprudence.

The objection which Prof. Black makes to my use of the term pyorrhœa alveolaris, I do not think well taken. In the first place, no attempt was made to describe a new form of disease. It was simply the recognition of the fact that what the profession has long recognized as pyorrhœa alveolaris, does not begin at the gingival margins, but near the apical extremity of the root. In this the origin is only indicated. No new form is even suggested or hinted at. I am convinced that if the disease could be seen in its earliest stages rather than after it has made destructive progress, there would be less doubt as to where the disease begins or the nature of the causation. The term pyorrhœa alveolaris refers of course only to one of the most prominent symptoms. A better term based on its pathology would be gouty pericementitis.

In medical nomenclature a disease is frequently designated by a term having reference to its symptomology, or it may be by a term indicative of its pathology. Either is thought justifiable.

Though I called attention to the proper term in my first paper, I preferred to use the term pyorrhœa simply for the reason that the profession by long use is familiar with it, and it expresses a well-known pathological state.

The term serumal calculus or Dr. Ingersoll's "sanguinary calculus" simply states the fact that we have a calculus from the blood. When I use the term hæmatogenic calcic pericementitis, I state clearly what I mean, that is that there is an inflammatory condition due to a deposit from the blood. This is more than simply serumal calculus—it is indicative of a serious inflammatory condition which as I have stated, I believe has a gouty origin.

Again under the head of "suppuration" Prof. Black is most unfortunate in not being familiar with approved authority when he states that the group of inflammatory disorders resulting from the uric acid dyscrasia are habitually free from suppuration. Sir Dyce Duckworth, M. D., in his "Treatise on Gout," page 82, says, "The synovial membrane is sometimes greatly congested, and thrown into folds, which project into the joints." "Fagge recorded a notable example in which loose flakes of lymph, much synovial fluid, and, in one joint, thin watery pus was also found, the latter burrowing into the adjacent thenar muscles of the thumb." "Dr. Goodhart found very similar conditions in another case." Though he says pus is rarely found, yet, "in bursal sacs impregnated with urates, inflammatory changes going on to formation of pus may be occasionally met with." "Scudamore met with four cases of suppuration as the termination of gouty inflammation, the result being modified in each case by an attendant secretion of urates. Norman Moore found puriform fluid in a gouty knee joint in a man of forty-six." If it would make the fact more conclusive, fifty cases might be recited from this eminent author. Just one word to some of our doubting friends when they speak authoritatively as to whether a patient has any form of gout or not. Do they recognize that there may exist visceral gout—gout of the respiratory system —bronchial gout, laryngitis of gouty origin, arthritic pneumonia, embolic pneumonia resulting from gout, gouty parotitis, gouty disorders of stomach and intestines? Indeed is there any organ or tissue in the body not subject to gout? When Professor Black speaks of paroxysmal gout as if it was unheard of in the teeth, I fear his experience has been limited, for I cannot think he would fail to recognize it if he met with it. Members of the profession who are familar with patients suffering from such expressions know well how quickly they respond to constitutional antigout treatment.

A word in closing. Since the publication of the first paper in the January *International Dental Journal*, I have been frequently asked if I desired to make any modification of the views therein expressed. Let me say simply this: great care must be exercised in differentiating the various grades of pericementitis, if success is to attend the treatment. C. N. PIERCE.

PHILADELPHIA, July 26, 1894.

MEMORANDA.

Old Point Comfort, Va., August 10, 1894.

Previous to adjournment to meet at Asbury Park, N. J., the second Tuesday in August, 1895, the American Dental Association elected the following officers:

President, Dr. J. Y. Crawford, Nashville, Tenn.; First Vice President, Dr. S. C. G. Watkins, Mount Clair, N. J.; Second Vice President, Dr. Thomas Fillebrown, Boston, Mass.; Recording Secretary, Dr. Geo. H. Cushing, Chicago, Ill.; Corresponding Secretary, Dr. Emma Eames Chase, St. Louis, Mo.; Treasurer, Dr. Henry W. Morgan, Nashville, Tenn. To fill vacancies on Executive Committee, Dr. H. A. Smith, Cincinnati, Ohio; Dr. C. N. Pierce, Philadelphia, Pa.; Dr. Louis Ottofy, Chicago, Ill.

A committee on nomenclature, consisting of Drs. Guilford, Ottofy, Rhein, Weeks, Goddard, Shepard, Stubblefield, Molyneaux, and A. H. Thompson, were appointed to arrange and make an exhaustive report upon dental nomenclature at the next meeting.

The Southern Dental Association at its meeting at the Hygeia Hotel, Old Point Comfort, August 2 to 6, inclusive, elected the following officers:

President, Dr. H. E. Beach, Clarkesville, Tenn.; First Vice President. Dr. John S. Thompson, Atlanta, Ga.; Second Vice President, Dr. Louis P. Dotterer, Charleston, S. C.; Third Vice President—Dr. J. W. Seals, Stuttgart, Ark.; Corresponding Secretary, Dr. E. P. Beadles, Danville, Va.; Recording Secretary, Dr. S. W. Foster, Decatur, Ala.; Treasurer, Dr. H. A. Lawrence, Athens, Ga.

Vacancies on the Executive Committee were filled by the election of Dr. S. B. Cook, Chattanooga, Tenn., and Dr. V. E. Turner, Raleigh, N. C.

The next place of meeting is Atlanta, Ga.

The National School of Dental Technics perfected its organization by adopting a constitution and laws, and electing the following officers:

President, Dr. D. M. Cattell, Chicago, Ill.; Vice President, Dr. Thomas E. Weeks, Minneapolis, Minn.; Secretary-Treasurer, Dr. J. F. Stephan, Cleveland, Ohio.

Executive Board—Thomas E. Weeks, Geo. H. Wilson, Henry W. Morgan.

The objects of this association are the mutual improvement of its members and the unification and extension of technical teaching in America.

Its membership is confined to Professors of Operative and Prosthetic Dentistry, and Teachers of Technic in the colleges belonging to the National Association of Faculties.

Eleven colleges are represented in the charter membership, and fifteen more have filed their applications for membership. T. E. W.

Old Point Comfort, Va., August 6, 1894.

The following officers and standing committees were named for the National Association of Dental Faculties:

Officers and committees for 1894-5: President, Frank Abbott, of New York;

Vice President, S. H. Guilford, of Philadelphia; Secretary, Louis Ottofy, of Chicago; Treasurer, H. W. Morgan, of Nashville.

Executive Committee: J. Taft, of Cincinnati; Thos. Fillebrown, of Boston; B. Holly Smith, of Baltimore.

Committee *ad interim:* J. Truman, of Philadelphia; F. Peabody, of Louisville; T. W. Brophy, of Chicago.

Committee on Schools: J. A. Follett, of Boston; F. J. S. Gorgas, of Baltimore; Louis Ottofy, of Chicago; C. N. Peirce, of Philadelphia; T. W. Brophy, of Chicago.

Committee on Text Books: J. D. Patterson, of Kansas City; A. O. Hunt, of Iowa City; J. B. Willmott, of Toronto; T. E. Weeks, of Minneapolis; J. P. Gray, of Nashville.

Special Committee on Preliminary Examinations: F. Peabody, of Louisville; H. A. Smith, of Cincinnati; H. W. Morgan, of Nashville

THE SOUTHERN DENTAL ASSOCIATION.

The recent meeting this month at Old Point Comfort was well attended and the discussions animated and interesting. Among other interesting features Dr. H. B. Noble, of Washington, D. C., submitted a report as chairman of the committee on literature and voluntary essays After noticing the several contributions made during the past year to the literature of the profession, he said, "If the standing of dentistry is to be judged by its literature, the past year is one of marked improvement; especially is this the case in the editorial department of our dental journals;" "long, windy articles are going out of date; what is wanted is short articles on specific points," "The interchange of papers between societies of different localities has been spoken of as a means of presenting subjects for discussion, and of encouraging a fraternal, friendly spirit that would serve to interest and infuse new blood into some of our stagnant, badly attended societies." "Our minds like our instruments need sharpening, and like our teeth are improved by good vigorous use; an active educated brain will the better guide our hands in those delicate operations we are daily called upon to perform."

"I would recommend that our local societies subscribe for the various journals and make themselves into a sort of circulating library for the benefit of those who cannot or will not subscribe for them, but could thus be induced to read them."

Dr. J. Y. Crawford in a ringing speech before the Southern Dental Association, said, "If you have anything which will help us; which will help humanity, give it to us, *give* it to us. Don't hide it thinking to make money out of it. If you got all the money the dentists have you would not get much. You assumed an obligation to freely give when you chose a *profession* instead of a *trade* or *business*. Again I say, if you have anything which will help us, GIVE IT TO US." T. E W.

NORTHERN ILLINOIS DENTAL SOCIETY.

Northern Illinois Dental Society will hold its annual session in Aurora, Wednesday and Thursday, October 17 and 18, 1894. A good programme is in course of preparation and all dentists in Northern Illinois are expected to be there at the beginning and stay to the end.

JAMES W. CORMANY, *Secretary.*

The annual meeting of the Minnesota State Dental Association will be held at Minneapolis, September 12, 13 and 14, 1894. A cordial invitation is extended to the profession to be present.

C. W. JONES, *Secretary.*

THE DENTAL REVIEW STAFF.

An addition has been made to the staff of the DENTAL REVIEW. Dr. Thomas E. Weeks, of Minneapolis, has accepted an associate editorship. Dr. Weeks is so well and so favorably known in the profession that the REVIEW feels like felicitating itself upon the acquisition.

RECIPROCITY.

His gold her "aching void" did fill,
Her gold, his own, forsooth—
His cavity was in his purse;
She had one in her tooth.

—*Exchange.*

Editor Dental Review:

Please announce in the REVIEW that the First District Dental Society will hold its annual meeting in Peoria, September 11 and 12. A thoroughly practical programme has been prepared and an instructive and interesting meeting is expected.

Dr. Newkirk, of Chicago, will give us a clinic, gold filling, and a paper on pyorrhœa.

O. M. DAYMUDE, *President.*
W. O. BUTLER, *Secretary.*

DELTA SIGMA DELTA.

At the recent annual meeting of the Supreme Chapter of the above society the following officers were elected: Dr. R. B. Tuller, Supreme Grand Master; Dr. F. H. Zinn, Supreme Worthy Master; Dr. A. H. Peck, Supreme Scribe; Dr. P. J. Kester, Supreme Treasurer.

The year just passed has been one of encouraging prosperity for the Fraternity, and with such officers as have been elected for the coming year we predict even greater progress.

An informal reception and lunch was tendered Dr. Thomas E. Weeks, of Minneapolis, Minn., at the Saratoga Hotel, by the Supreme Chapter of Delta Sigma Delta, as a token of the esteem in which Dr. Weeks is held by his brethren in the fraternity.

The meeting was well attended by the officers and members of the Supreme Chapter in Chicago. Dr. Holmes, ot Canandaigua, N. Y, one of the oldest and most enthusiastic members of the order was also a guest of the evening. Both gentlemen expressed their appreciation of the warm greeting which they received

The occasion was but one more of the many pleasant reunions which is a feature of this fraternity.

MISSOURI STATE DENTAL ASSOCIATION.

At the thirtieth annual meeting of the Missouri State Dental Association, held at Excelsior Springs, July 10-13, 1894, the following officers for the ensuing year were elected: Dr. J. T. Fry, Moberly, President; Dr. D. F. Orr, Liberty, First Vice President; Dr. W. L. Reed, Mexico, Second Vice President; Dr. W. M. Carter, Sedalia, Corresponding Secretary; Dr. S. C. A. Ruby, Clinton, Recording Secretary; Dr. James A. Price, Savannah, Treasurer; Dr. James A. Price, Savannah, Committee on Law. The next meeting will be held at Pertle Springs, beginning on the first Tuesday after the Fourth of July, 1895, and continuing in session four days.

W. M. CARTER, *Corresponding Secretary*.

OBITUARY.

PROF. RICHARD B. WINDER.

It is with the profoundest sorrow that we record the death of Dr. Richard B. Winder, July 18, 1894, at his home in Baltimore. He died of fatty degeneration of the heart, aggravated by la grippe, after an illness of several months. He bore his illness with that calm heroism which was one of his many excellent characteristics, passing away calmly and peacefully. His hosts of friends throughout the country will sincerely mourn the loss of one whose sterling qualities and largeness of heart commanded their respect and won their love.

Dr. Winder was a Virginia gentleman, who at the close of the war entered the Baltimore College of Dental Surgery; graduating in 1867. In 1873, supported by the best men in the profession, he founded the Maryland Dental College, which was a direct factor in the elevation of dentistry. From that time until his death he labored incessantly for this end, and this unselfish and untiring zeal undoubtedly shortened his life.

In 1879 the Baltimore College of Dental Surgery made a proposition to unite with the Maryland Dental College; that college to have one man retained in the new faculty, preserving the name of the Baltimore College of Dental Surgery. Dr. Winder was the man chosen by his college. He was made Professor of Operative Dentistry, and in 1882 became Dean of the faculty, which position he has since held—how well need not be told. He was always personally interested in the students, making himself their friend, and at all times endeavoring to instill them with the true professional spirit. His family have the sympathy of the DENTAL REVIEW in this their irreparable loss. They have for consolation the assurance that but few men in the dental profession so well deserve the high tribute which is being paid to his memory by all who knew him.

OBITUARY.

GEORGE WASHINGTON KELLEY.

It is with profound sorrow that the publishers of the DENTAL REVIEW announce the death of Mr. G. W. Kelley, which occurred in Philadelphia, July 28, at 11:20 P. M. Mr. Kelley had been connected with the house of H. D. Justi & Son for more than a quarter of a century, and was so universally esteemed by all who knew him that his demise is a sad blow to his associates and friends. He was genial in bearing, modest in demeanor, quiet in manner, but with a reserve force that made him a power for good in all his associations in life.

He was well known by the profession throughout the country, and always a welcome visitor to the members of the dental trade, with whom he had extensive business relation. At the time of his death he was President of The American Dental Trade Association, which in a notice sent out by the Secretary expresses the high appreciation in which he was held by his associates. We feel a deep personal bereavement in his death. He has served faithfully and well. He had to a large degree grown up with the development of the business, and always had the best interests of the house at heart. To his family we express the deepest sorrow.

Mr. Kelley was born October 13, 1830, and was interred at Poughkeepsie, New York, July 31, 1894. The cause of death was periostitis following rheumatism, from which he had been suffering for some time.

THE

DENTAL REVIEW.

VOL. VIII. CHICAGO, SEPTEMBER, 15, 1894. No. 9

HOBBIES.*

BY ARTHUR B. FREEMAN, M. D., D. D. S., CHICAGO, ILL.

MR. PRESIDENT, MEMBERS OF THE CHICAGO DENTAL CLUB.

Gentlemen :—The subject of "Hobbies," to which I invite your attention this evening, is one which is very intimately allied with the history and the evolution of dentistry, from the time it was a mere mechanical trade, confined within the precincts of the laboratory and operating room and presided over by the so-called "dentist," who shut himself, his knowledge, methods and ideas behind "positively no admittance" doors, until the present day of preeminence of American dentistry and broadened ideas of professional ethics, numerous dental societies and associations, well equipped, prosperous dental schools, and not least to be mentioned, a liberal dental journalism.

This mighty evolution in dentistry is principally the normal result of a generous liberality on the part of a few eminent practitioners of the early day, whose sentiments are embodied in a preamble adopted at the first meeting of the Western Dental Association at St. Louis, in 1856, as follows :

"This society is organized for the purpose of elevating and perfecting the noble profession of dentistry by the cultivation of an enlarged liberality of sentiment, by the fostering of an honorable spirit of emulation, and by a full and free interchange of views and opinions."

Your essayist has labored under great disadvantages in preparing this manuscript in not having been an active practitioner of the early period, when hobbies were being born to live, or to die ; when the diverse and varied theories were under discussion, and the keen warfare of investigation, experimentation, criticism and debate were eliminating the worthless from the good—the chaff from the grain—and thereby building foundations more surely than they knew for an honored and truly scientific profession.

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*Read before the Chicago Dental Club, June, 1894.

At the outset I wish to state that in presenting the various subjects my aim will be to treat them but tersely, not entering into a detailed discussion, but adding approval, criticism or disapprobation with the hope that a lively debate will be awakened which shall be prolific in ending some of the nefarious practices now in vogue, as well as to stimulate us to efforts to elucidate more of the misty unknown.

With these prefatory sentences, allow me to introduce the subject in hand.

Hobbies are defined as "the pursuit of favorite, eccentric, or whimsical methods, theories, or opinions." Fads are usually considered as synonymous with hobbies, but it is the opinion of the writer that a distinction should be noted.

Hobbies, while they may amount to nothing, may on the other hand be wonderful strides in the march of improvement; never regarded, received with ridicule, or merely as a jest, until the hobbyist, believing in the offspring born of the activity of his own mind or the necessities of an arduous practice, having persistently worked for his pet hobby, and refusing to be deterred by ridicule and sarcasm, ultimately forces it upon the serious attention of the public and secures recognition and adoption. Such results are illustrated by the history of vaccine inoculation and modern bridgework.

The immortal Jenner had all kinds of indignities heaped upon him by scientists of his day, and was even mobbed by the populace in the streets of his native city, because he had a hobby; but to-day he has millions of grateful admirers for his gift of immunity from the dread small pox. There seems to be some cause for general regret that when bridgework was presented to a local society of this city, some eighteen years since, that the hobbyist was not treated with more consideration, and his hobby accepted until proven worthless.

Hobbies then may be said to be thoughts, ideas, or modes which have been stepping-stones to useful, practical methods or systems; while fads are more frequently crotchets--possessed of qualities of no value--and which are practically either useless or foolish, and perhaps even worse.

Hobbies are usually ridden until something comes of them, and many of the most unpromising theories both in dentistry and medicine, have evolved into what is to-day a well-developed system of treatment. Fads are usually short lived, and fall from their elements of weakness, uselessness, or folly.

Your essayist believes that it is to the hobbyist who is always an enthusiast, that dentistry of the present time owes much of its superiority. If this proposition be tenable, the more hobbyists and hobbies produced the more rapid our progress and the greater the improvement. The writer would not be understood to encourage reckless, unscientific work, but more legitimate, original research, and experimentation, especially along the lines which may be termed eminently practical.

Unfortunately there seems to be a lack of conservatism and sound judgment on the part of the rank and file of the profession; and often a hobby of merit is killed before it is fairly in existence simply because the enthusiast, in the exuberance of his own success, has presented his method before it is fairly developed and tested, and here the irrepressible trailers have undertaken to make the application, have utterly failed, and in their humiliation have immediately condemned. Again, many worthless theories and methods are pursued when there are other better ones already in existence.

Among the earlier methods which stirred the young profession were these kindred ones: The use of noncohesive gold foil and amalgams, which were developed and became aggressive opponents when the American Society of Dental Surgeons, in August, 1845, passed what has since been known as the Anti-Amalgam Pledge, binding its members to discountenance and abstain from the use of amalgams on penalty of expulsion from the society. The minority withdrew, and in opposition to the majority dared to believe that amalgam as a filling material possessed as much merit as gold foil, and advocated its discriminate use for saving teeth below medium in structure. This war between the two factions raged fiercely for five or eight years. In 1850, Dr. Elisha Townsend, of Philadelphia, one of the former supporters of the pledge, personally rescinded the same in a paper read before the society, and published in the *Dental News Letter*, in which he urged that the "embargo against opinions" be removed.

The society died a natural death, and was succeeded by one with a more liberal code as a result of this warfare. It seems almost incredible that an intelligent body of dentists should ever have attempted to abolish the use of a filling material possessed of so much worth, and properties so eminently adapted to save teeth of poor quality and thus benefit the masses, but some of our ancestors were bigoted and arbitrary in other departments of life than in dentistry.

In 1853, sponge or cohesive gold first made its appearance, and experimentation was followed with condemnation by many. The society meetings of this date were largely given up to the debate of this all-absorbing topic ; and the disciples of noncohesive foil and sponge, or cohesive gold were about evenly divided until the discovery and announcement in 1855, by Prof. Arthur, of the increased *co-* or adhesive properties of noncohesive foil when annealed in the spirit lamp. This was a long stride toward perfection in the use of gold.

To such an extent did the advocates of "nothing but gold" ride their hobby that history records Dr. Atkinson as having built down the entire crown of a central incisor at an expense of $250.00 to the patient—which lasted only five months; while Dr. Varney and two assistants spent seven and one-half hours each in restoring the crown of a molar. (This was Dr. Varney's last operation, as from such overwork he soon after died.)

At last the valiant, versatile and now venerable champion of the plastics, Prof. J. Foster Flagg, arose in open rebellion, and instead of the "golden fad" being the only true method of preservation of the teeth, he proclaimed a new hobby—by boldly asserting that "in proportion as teeth needed saving, gold was the very worst material that the dentist could use for that purpose."

It is stated that he proceeded to demonstrate his proposition with a logic so unanswerable, and an eloquence so captivating that the advocates of gold fairly held their breath in astonishment. His most telling argument was a pathetic recital of the woes entailed upon the human race by those ridiculous men who insisted on hammering gold—beautiful gold fillings, into every tooth that came within the reach of their mallet. The truth was too painfully evident that the golden hobby was being overridden, and the contending forces of these opposing hobbies soon established the proper equilibrium and to-day the practitioners of the widest usefulness frankly acknowledge the employment of amalgam as well as gold, cements and gutta-percha as agents through which they render the best service to all classes of patrons.

In the equilization and adjustment of this evil it is not strange that the opposite extreme was reached, and a few men proclaimed their allegiance to amalgams only. Confining their labors wholly, as some of them did, to teeth below medium in structure, I believe their treatment to have been good.

Not until the necessities of Dr. Barnum, of New York, suggested, and later caused to be manufactured, in the early sixties, the rubber cofferdam, was the Utopian reached in the use of gold. With this method of excluding the moisture and the perfection attained in the manufacture of cohesive gold, extensive operations in contour work were a natural result.

Other hobbies contemporary with the foregoing were the advocacy of cohesive gold foil from No. 4 to No. 160, as advocated by Dr. Atkinson, and mallets from the light wooden one to the eighteen ounce lead. Retaining points or holes had their day and were afterward, through the bad grace of a former advocate, alluded to as "pot holes." Their principal objection was the too large caliber of the point, endangering either the pulp or causing cleavage of enamel and eventual failure of the filling at that point.

Chiefest among sinning fads, the effect of whose ravages have been a perpetual eyesore to many practitioners and a source of untold discomfort to hundreds of victims, was the Arthur "mode" of separation. Many honest men believed in the false teaching and as a result many fine teeth were mutilated. No practitioner here present is too young to have seen the results of this miserable practice, and yet at one time it was almost universal.

I cannot help pausing to ask if many, perhaps all of us do not create objectionable spaces between the teeth too often at the present day?

The germ theory of caries and the incident germicide treatment of the teeth has come to be a hobby of such gigantic proportions that there seems to be great danger that the profession is losing sight of expert manipulation and substituting therefore experimental remedies, materials and combinations.

Your essayist pleads guilty to pessimism to the extent that he believes in the cardinal virtue, that "cleanliness (in all dental operations) is next to godliness," but he pins his faith more largely to delicate, expert manipulation, with well-adapted instruments, and mild, simple remedies than to any combination of germicides or methods of treatment aimed directly at their destruction. I am, myself, as one on the extreme periphery of such investigation and influence, perhaps fearing infection, and while acknowledging my mental inability to cope with the sturdy champions of these minute beings, it seems to me that in their efforts to be scientific many are blindly accepting unproven theories.

Having read the leading articles on the subject from time to time, and admired the mental acumen and ingenuity of the authors, I have still failed to absorb much that has been invaluable at the chair.

For some hundreds of years it was believed that the arteries were filled with air during life, and the ancients derived the name "artery" from two Greek words meaning air and a vessel.

This theory is now a disproved one, replaced by the circulation of the blood.

It may yet be discovered that the germ theory of disease is principally "wind," and that microörganisms exert a beneficial instead of a deleterious effect upon the human economy in pathological as well as normal conditions. The first query presenting itself regarding the theory is, why is it called the "Germ Theory?" Is it because the microörganisms colonize, hold a solemn conclave, and after due deliberation, determine to eat up an isolated tooth, or many in the same mouth? If I understand Dr. Miller's theory, he only claims that the leptothrix buccalis aids, abets and assists in the conversion of unfermentable cane sugar into fermentable glucose, which, passing through chemical changes, forms lactic acid, the lactic acid primarily disorganizing the tooth structure.

This being true, would it not be more appropriate to talk more about the acid theory and less about the germ, and to aim our treatment to that end?

To my mind some of the best arguments against the germ theory of caries and its treatment are to be adduced from the immense volume of testimony from the experience of the past. Experience, though often dearly purchased, is the most faithful instructor—the most infallible guide the dentist has ever possessed. No volume of literature, however elegantly bound, however carefully compiled, however beautifully embellished with engravings, however practical in its application to the needs of suffering humanity, ever appealed one-half so strongly to my reason as does the volume of experience of the "Old Guard" of our profession, and the thousands of truly American dentists who for forty years, more or less, have successfully accomplished the same operations with the same degree of success, which our modern microbe hobbyist asserts he obtains with his germicides and "dopes" of various degrees; and this too, with simple methods, simple instruments, mild medicaments and gentle, delicate manipulation.

For forty years the operation of root filling has been successfully accomplished by skilled operators, by the simple method of thorough, careful cleansing of canals, gentle stopping and unstopping with shreds of cotton—I care not whether medicated or not—and finally an hermetical root filling. Wherever irritation or failure has followed, I contend that it is traceable directly to mechanical irritation by the material used, provided the membrane is in a healthy or normal condition when the operation is undertaken; and not to one or many microbes which perchance have been isolated and imprisoned by the introduction of the filling.

There are men in our profession who have as admirable success in root treatment as the advocates of all the germicides in existence, who rarely ever use the rubber dam in treatments, who use the simplest remedies and few of them. Gentlemen, we cannot condemn their methods or their treatment. Their success is a monument which will not be shaken by feeble argument. Personally I use the dam in difficult cases; but in fifteen year's experience I have treated a large number of teeth with, I think, very creditable results without the dam; and to-night I am enough of a heretic to voice the sentiment that I am willing to have any tooth under treatment flooded with saliva and exposed to the deleterious influence of bacilli of the most virulent order for any length of time, and that afterward they can be treated as speedily and filled as comfortably as those cared for by the convert to the germicide treatment.

Another argument in this connection is the condition of acute pericementitis in sound teeth (without carious conditions), the pulp having become spontaneously devitalized. Is it the microbes that arouse disturbance and set up the acute inflammation? How did they get there? Did they migrate through the enamel and dentine or go on an excursion through the stomach, lungs or other organs to reach the arteries, and then direct to this destination?

No, it could not have been through the blood, for I do not remember to have read in my physiology that this fluid in circulation is contaminated by microörganisms, except in pyæmia.

According to Knapp, suppuration in every case depends on the action of certain bacteria which cause the splitting up of living nitrogenous tissue into simpler compounds. If it is pertinent, I would ask what causes the inflammation which precedes the suppuration and also the stages of congestion preceding stasis? Does it not seem rational that in the case alluded to above the exciting cause is mechanical irritation from expansion of gases? If caries is primarily caused, as has been believed and advocated, by poison generated by colonies of bacilli, how is it possible that so many mouths are exempt, which are actual hotbeds for the multiplication of germ life? Is it because the soil of some mouths is not well adapted to the perpetuity of the five special fungi which do the devilish work?

The disciples of this theory are often heard to produce the argument that a sound tooth introduced into a test tube containing a culture of leptothrix buccalis is soon riddled with caries identical to that in the mouth, and the bacilli have penetrated the tubuli. How much does this prove? It seems possible that a tooth thus exposed would become more readily decomposed than one supported by a strong vital resistance and washed by an alkaline fluid.

All nature is alive with minute life, and especially in pathological conditions is their number increased. What is their function? Why is there multiplication in morbid conditions? I am not scholar enough to answer; but while visiting a ranch out in the cattle country recently, I saw strewn on the plains the carcasses of many cattle that perished in last winter's storm, which were literally alive with minute organisms. It did not occur to me that they were the primary cause of loss to the stockman; but rather that they were nature's scavengers doing her bidding.

The danger of overenthusiasm regarding this hobby, as applied to the treatment of teeth, is the placing of too great stress on the septic and aseptic conditions and too little on the manipulative requirements for the truest success.

Local anæsthetics and obtundents for sensitive dentine have been numerous, but on the whole rather unsatisfactory in their general results. In 1851, Mr. Aren reported chlorated chlorohydric ether in doses of 15 to 30 drops applied to the gums. In 1854 refrigeration produced by pounded ice and salt in bags, locally applied, was suggested and used. Carbolic acid was recommended by Dr. Simpson in 1856, and in the same year Dr. C. J. Page, of Boston, brought to notice bisulphurate of carbon vapor applied by means of wide-mouthed bottles. Galvanism and electricity were first used for the extraction of teeth in 1858. These dates show that efforts in the direction of local anæsthesia are not new.

In the earlier days simple, harmless remedies were chiefly employed; but in more recent years many secret preparations have been brought out which analysis has proved to be most dangerous to use.

Some of the obtunders have contained arsenious acid in quantities sufficient to destroy the vitality of the pulp, and the solutions for hypodermic use have too frequently contained drugs in sufficient quantity to produce toxic effects.

If we must, as professional men, use anæsthetics in any form, let us know what we are using, the action of the drugs, and in case of toxic effect, what remedial agent will counteract it. It is a fact beyond dispute that as yet no local anæsthetic has been discovered which is universally applicable or painless, either in its effect or application, yet much pain may be alleviated by their use, if judiciously selected and supplemented by sharp, well-adapted excavators and engine burs in the hands of careful operators.

The methods of devitalizing pulps have been few, but the atrocious character of some of them needs strong condemnation, even in this late day. To extirpate a live pulp, or one yet capable of conducting sensation of a severe character is barbaric, but to "knock out" a live pulp is inhuman, and an act unworthy of a scientific gentleman. There are some who condemn the use of arsenic for devitalizing; but carefully applied, in minute quantities, I see no objection to its use, and certainly its effect in the majority of cases is speedy and comparatively painless.

So far as I have been able to ascertain, root filling was first practiced and introduced in 1840 to 1845 by Dr. Maynard, of Washington, D. C. His original method was the mechanical cleaning of the canal, slight enlargement, and the introduction of a gold filling from apical foramen to pulp chamber. For many years his method was followed, and at the present time is practiced to some extent.

Only the other day it was my privilege to examine a root filling of tin and gold introduced more than twenty years ago in an upper third molar, and to find it in perfect condition. Also a root filling made with a hickory point less than six months since came under my observation. This filling has caused constant irritation and discomfort.

Why do some practitioners continue to take so many chances in the use of irritant filling material, when there are nonirritant materials which may be safely and comfortably used instead?

The hobbies of more recent date which have gained quite general notice are implantation, immediate root filling, electro-deposit base plates, and copper amalgam.

Implantation has now been practiced long enough by skilled dental surgeons to demonstrate that only a very small percentage at least, of all the cases treated, can be called successful.

Only three or four years ago we heard much of the operation at clinics and the leading dental meetings, while to-day there is little written or said about this short cut to glory. On mature after-consideration the query naturally arises: Why would it not have been just as well and the chances of success equally great to cut a thread in the alveolus after using a pod auger and then adjust a metallic screw with a porcelain crown attached and make the implantation with a monkeywrench? The chief obstacle, absorption of the root, would have been obviated at least.

When it was my privilege, some fifteen years since, to begin the study of dentistry, I heard words of caution about the over-treatment of root canals, but what a wonderful change has come over the profession. I am now told that I am sadly behind the times because I treat them at all, and because I cannot believe that it is safe, conservative treatment to do the immediate root filling act, except in a small minority of cases.

In the last Illinois State Society Transactions is published to the profession of this State and the world, the aggressive views of the modern hobbyist of this persuasion. If I understand aright what I read in that article, the essayist makes no exceptions in favor of a prolonged treatment under the following conditions:

1st. After heroic extirpation of live pulp.

2d. After removing devitalized pulp.

3d. After removing putrescent pulp.

4th. When there is peridental abscess with fistulous opening.

5th. The same condition without fistulous opening.

I look upon immediate root filling as blocking all chances of after-treatment, and believe that most conditions can be reached more effectively through two doors than through only one, or possibly none. I consider it untrue to our patrons, our profession, and to ourselves, to use methods which must certainly very often cause instead of cure disease. To the conservative, it would seem far wiser to allow nature to exert her curative powers, assisting with anodyne or stimulant treatment, until there is a strong probability that an obstinate, "volcanic eruption" will not supervene, rather than to force the condition to a crisis which will too often cause the patient excruciating pain, and heap coals of fire on the head of the operator.

It is to be hoped that very soon the more violent stage of this fever will be alleviated, though unfortunately at the expense of a patient and long-suffering public, instead of the oversanguine hobbyist.

I have myself had some sad experience with electro-deposit plates, and while still believing that perfect adaptation can be obtained by this method, I have found the work chiefly objectionable because of its unfinished character, as furnished by the manufacturers, and their economical ideas in the use of gold for final plating. Another objection is the time required to send the work to a distant city, and accidents which have often occurred from careless packing. I believe most practitioners who have tried this method have discarded it, mainly because they felt, and justly so, that they were palming off a counterfeit upon their patrons which, in time, money and annoyance cost them more than the genuine article.

One extreme follows another, and from an amalgam containing a small per cent of copper, which is universally conceded to be the best tooth saver among the amalgams, the scale was rapidly ascended, and on the theory that a little copper was a good thing, an all copper amalgam would reach perfection, the copper amalgam hobby was ushered in and created a mighty furor.

Papers were written and whole evenings devoted to its discussion. Only a little time has passed, and while the dealers were unable to supply the demand in the zenith of its glory, it is to-day a drug on the market. Its elements of weakness seem to have been the excessive amount of mercury used, its slight edge strength and the alacrity with which the various weak acids acted upon the copper. In a certain limited class of cavities it is probably well fitted to conserve tooth structure; but for extensive crown and contour work it certainly does not stand the test of time.

There are some men, even in the dental profession, who, it would seem, believe that if their pet scheme of salvation, or hobby, is not adopted, destruction will follow, and failure to reach that haven of success toward which we are all plodding, will ensue. It is my belief that modes of procedure may differ materially, and yet the results obtained be wholly satisfactory.

In conclusion. Every hard worked doctor should have a pet "hobby" entirely outside of his everyday occupation, the temperate indulgence of which may mean recreation, exercise and rest.

Let it be a hobby of whatever stripe the individual enjoys best, but let it be one that shall make him oblivious of his routine daily work, and let it be indulged in before he reaches his dotage.

THE PREPARATION AND SHAPING OF ROOTS OF TEETH WITH REFERENCE TO BANDING AND CROWNING.*

BY R. B. TULLER, D. D. S., CHICAGO, ILL.

It is hardly to be expected that we can thrash our old straw and get much wheat. But since crowning and bridging have come to be extensively and skillfully practiced and extensively and *un*skillfully practiced, a discussion of the subject I have chosen cannot come amiss. I do not come before you with the conceit of presenting you with any original ideas, for that is very hard to do on any subject in dentistry, or out of it. It is said that any one who presents one really original idea or thought in a lifetime is far beyond the average of even the brilliant lights of the world. In fact there is a trite saying that there is nothing new under the sun.

I was led to select this subject, not because I expect to enlighten you with any new "wrinkles" in treating and shaping roots, but more to emphasize the faults that frequently come under my observation which render crowns and bridges so often failures. I lay no claim to being an authority or an expert, having been rather conservative regarding this class of work; but it is nearly twenty years since I entered upon the practice of dentistry, and if it was not for the triteness of the saying above quoted, I could say that I have seen the introduction and growth of the method of saving teeth and restoring lost ones by crowning and bridging. What observation and experience has given me in that time enables me to express some opinions. We look upon it and treat it as something comparatively new in dentistry; but upon investigation we find that nearly everything we attempt in our profession to-day was attempted hundreds, and not unlikely thousands of years ago.

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*Read before the Chicago Dental Society, May, 1894.

We have in this society several who may be counted experts and perhaps the best authorities known to-day in crown and bridge work; and from them, gentlemen, if I can succeed in drawing them into the discussion, you may hope to get the wheat that will come from this thrashing.

I do not believe there is any class of work done under the name of dentistry so much abused as crown and bridge work ; and most of it is due to either ignorance or willful neglect in the first steps—the very first step—that of diagnosis. Pathological conditions, not infrequently involved with constitutional troubles, almost invariably command our first attention, and the failures that come to our notice are due to neglect of these things more than fault of workmanship or misapplied principles of mechanics. Yet it is true that the latter frequently complicates the trouble.

While good crown and bridge work, applied under proper conditions, may be a blessing to humanity it is to be deplored that it offers so many opportunities for misapplication and malpractice as to almost counterbalance the good it is possible to do. There are too many men in our profession, even among those who claim to be ethical, who seem to be governed in this class of work by the mechanical possibility of attaching something to a root (or several of them), and thus give some color to the assumption of being crown and bridge workers, and commanding the fees customary for skillful work. How often do we find crowns upon roots where no attempt had been made to put the support in proper shape or condition. The opportunity presents itself where a crown can be suggested, the suggestion is acquiesced in and the dental hustler proceeds to adorn the root with a golden dome "while you wait."

One of my patients not long ago speaking of a dentist not unknown to most of us, and under whose care he had been for several years, said: "Between you and me, while Dr. So and So has a great reputation and a big practice, the work he did for our family never turned out very well. But, *say!* he's a hustler!" This virtue, that seemed after all to command my patient's admiration, seemed to me to account for his many failures.

And between you and me, gentlemen, there are a class of dental hustlers who do no credit to the dental profession though they do not let themselves down to the level of the advertising dentist. On the contrary, they put considerable emphasis upon the fact that they train with and belong to ethical societies. We all make mistakes and err sometimes in judgment; and one may lack the skill to do exactly as good work as another, but these things are common in all walks of life, and must be and are tolerated; but the man who, to hurry his work, willfully neglects or deliberately slurs over the details that are vital to the success, durability and real worth of the service he performs and accepts a fee for, is no more or no less than dishonest. He is not a credit to this profession or any other. From this class of men, often conspicuously ethical (as well as from the advertiser from whom we expect it) is due much of the odium cast upon the dental profession at large.

I need not enter here into details as to the therapeutical treatment that almost invariably becomes our duty preliminary to crowning roots. All these things you are familiar with, as the necessity for such attention is often as important as a preliminary to proper filling as to crowning. We all know it must be done and no doubt know how to do it, though we may not all follow the same method. We know, too, that these preparations often consume our time and tax our patience and skill in a way that we frequently are not adequately paid for; but we *must* do it.

I have often wondered of late whether that disease, that *bete noire* of the dentist, pyorrhea alveolaris (and the conditions that lead to it) is on the increase in the human family, or if experience has taught me to more quickly detect it, for it seems to me that of late years scarcely a patient comes into my hands, who has reached maturity, that is not suffering, to some extent, with this trouble. With me it is one of the things that oftenest stands in the way of inserting crown and bridge work for which I might collect a good fee.

A few years ago I advised a gentleman that the condition of six teeth, nicely distributed for supports to an extensive piece of bridge work, were in my estimation not suitable for a successful operation of that kind.

I found that pyorrhœa had so undermined every one of them that I had no hope of making them do proper duty as supports.

I explained the situation very carefully, but he went away loath to give up the bridge work for which he said he would not hesitate to pay $200.00. He was not long in finding another man who was not only willing but anxious to make a bridge for him. He pooh-poohed at the advice I had given him and said he could treat those teeth so that by the time the bridge was ready—a matter of ten days—they would be all well. Not one bridge but three were inserted. Not a tooth was cut off or crowned, but the supports were obtained by banding those teeth without even shaping. The fee was one-half what I had named. The gentleman was delighted and chaffed me for not doing the work, as he said I might have done, for $200.00. I said to him "You may need the services of a dentist still further; if you have any faith in me you know my address." Within two months he came to me—came when I was very busy and could not see him for an hour. During that time I heard him pacing my waiting room. When at length I had time I called him in and my greeting was "Why George, what is the matter? You have grown old since I saw you." He said he had grown old in the last three days; that he had caught cold in those teeth and was suffering the tortures of the damned. I found what I expected, all three of those bridges with their supports wabbling about in wells of pus, and the mouth and face badly swollen. He was an old friend, and I said "George, you *are* in trouble. To me it is not unexpected. The quickest and best way that I can give you relief is to remove the bridges, supports and all." He demurred and said the other dentist told him that if they did get sore all they needed was a little carbolic acid worked up around the roots with a toothpick. To cut the story short he left my office and never came back, though his wife is one of my regular patients. One day I ventured to ask how her husband got on with his teeth, and she replied "Oh, I hardly know, they're about like most false teeth I guess. He has to take them out when he eats and hunts around the bed for them in the morning."

The inference is, that I lost not only a $200.00 opportunity but a $15.00 or $20.00 opportunity of making the rubber plate he is now wearing. The bridges had to go but the man was ashamed to come back to me.

Now this story is rather an argument for the other fellow—the fellow with more business tact than I seem to have. He trains as an ethical dentist and quite a clever one too.

But I am still advising my patients that pyorrhœa when it is there must be cured, if it can be, before crown and bridge work can be safely inserted. The treatment of pyorrhœa as we all know cannot be successful without the removal of all calcareous deposits and if necessary the removal of diseased and necrosed alveolus, and I have yet to find a dentist who does not find many cases beyond his skill to restore to health. The medicinal agents most successful with me after the surgical treatment, are pyrozone followed by trichloracetic acid or sometimes sulphate of copper carried up around the roots with a tooth pick or properly shaped piece of wood.

Roots and teeth that are pulpless or that have been devitalized for the purpose of crowning must of course be properly treated and filled. There seems to be many ways of doing this that are satisfactory to different operators, but I incline to and practice with the greatest satisfaction to me, the root canal and abscess treatment advocated and emphasized by such good men as Drs. Black and Harlan. It is so well known I need not take up time to explain it. After a root is brought to an aseptic condition the main thing in filling it, I believe, is to effectually seal the apical foramen, and I frequently do this with a gutta-percha point without the introduction of chlora-percha previously as is usually done, I think. After drying the root by the use of cotton on a broach or paper points as thoroughly as possible I use absolute alcohol or chloroform to still further dehydrate and then with a broach moisten the canal with eucalyptol. I then select a gutta-percha point to suit and frequently clip them, using just what I need to seal the apex and with a stiff blunt broach warmed a little to make the point stick to it, carry it to place. The eucalyptol first acts as a lubricant and allows the point to go to place as if it was greased, but being a solvent of gutta-percha, it softens it enough to make it fit perfectly every inequality. Done in this way the remainder of the canal is left open for the fitting of pins, or if they are not desired the rest of the canal can be filled with anything suitable.

In regard to shaping roots for bands and crowns we all know that it is done not without some difficulty in most instances, and generally considerable pain to our patients. Many instruments have been devised for this purpose, but there is yet something lacking to enable us to do the work with the mechanical perfection we would like, and as it should be done. The whole secret of making a successful application of a false crown to a root bereft of its original crown, is, after pathological conditions have been treated, to have a mechanically perfect joining. If a band is used the root must be shaped to receive such band and permit of perfect contact. The sides must at least be parallel or beveled crownward. If the root has parallel sides the band must be made accordingly. If the root is beveled the band must take the same shape so that when in position there is contact at every point of its entire width. No spaces should be left to be filled up with cement. The same must be said so far as the whole cap and the pin that goes up into the canal are concerned. The cap should fit accurately and rest firmly, particularly at the periphery. The pin should fit the canal, or at least be in firm contact its entire length at four points, as for instance in the insertion of a square pin into a round hole, the four corners of the pin should be in firm contact with the walls of the canal its full length, so that there is not the least lateral play when the crown is put into place without cement. You know that all the glue in the world will not make a strong durable piece of furniture unless the joining is perfect, and if that is perfect,the thinner the film of glue between the two parts the better. It is so with cement in fastening on crowns. Make your joints in all parts so perfect that but the smallest drop of thin cement is needed. This of course does not apply to gold shell crowns where the entire hollow is to be filled with cement, but the principle is the same so far as the shell crown encircles the root. The fitting should be as perfect and close as it is possible to make it. For gold shell crowns I endeavor to get a slight bevel of the root, for all its strains must be borne by that contact, while other crowns, such as the Richmond, for instance, have a firm rest on the root as well as the support given by the dowel pin. Bands no doubt prevent root-splitting sometimes, but I believe an accurately fitted crown bearing as it should on its support and held by a properly fitted dowel, will without a band have little tendency to split the root. Give your crown no opportunity to tilt whether cemented or not and you will have little trouble with splitting or coming off.

Logan crowns are excellent in many cases, but it is frequently difficult to select a tooth in every way adapted to your case. When shape and shade are satisfactory we often find a variance with the size and shape of the root. In grinding them to fit, the pin is in the way and unless great care is taken the pin is weakened or altogether spoiled. I give preference to a crown made with a removable pin. It can be taken out until the grinding and fitting is done, and then firmly fixed in place. In the use of plain plate teeth or facings, one has always the advantage of being able to select such as will match perfectly the adjoining teeth. I am favorably impressed with the late method of using such facings and filling up all that is lacking to make a complete crown, shape and all considered, with porcelain body. This of course requires suitable apparatus to fuse the added porcelain, but with this system muffles are supplied convenient to attach to gas and bellows, and by their use some very extraordinary work can be done.

There is much to be done very often in shaping roots for crowns, with bands or without. While I do not feel justified in attempting to put an expensive crown on some disabled roots, I find in many other cases I can take a pretty bad root and put it in condition to do good service as a support for a number of years. When roots are decayed as we frequently find them above the gum at one or more points, I find it possible to build them up with amalgam so as to present a very favorable case for a crown. To be able to properly treat such roots it is sometimes necessary to first build them up with amalgam. Copper amalgam I find is well tolerated by the soft tissues it comes in contact with when used to lengthen out one or more sides of a root.

From Dr. Fernandez I learned a method of shaping certain roots for gold shell crowns that I like very much. It is beveling the root only on the two sides, mesial and distal, leaving the other two as we find them and leaving the stump as long as possible. We measure for our band in the usual way and then shorten the measure a trifle, so that the band is just a trifle small. In forcing it on to the root the expansion caused by the two beveled sides draws in tightly the other two sides though their shape is flaring, and makes an accurate fitting band.

Some dentists will tell you that crowns never ought to be put on without bands. I have some patients and I presume all of you have, who will not submit to having roots prepared for bands, and I believe that it is good practice in many cases to put on crowns without them; but in such cases there is more absolute necessity of accurate joining and of fitting the dowel than when a band is used, first to have a joint that will exclude the secretions of the mouth, and again to have that firmness of contact that prevents any rocking.

In the preparation and shaping of roots then, there are two great principles to be observed, the treatment necessary to put the root into a perfectly healthy and aseptic condition, and shaping of both root and crown so that there shall be *coaptation* as perfect as possible. With the exception of shell crowns, leave no spaces to be filled up with cement. Make joints tight and then use the thinnest film of cement possible to seal the joining.

OPERATIVE TECHNICS.

BY THOMAS E. WEEKS, D. D. S., MINNEAPOLIS, MINN.

CONTINUED FROM AUGUST REVIEW, PAGE 591.

FILLING MATERIALS.

Only such materials and preparations of materials as are used by the student in his primary work will be considered; dealing with the elementary principles which govern the filling of teeth; treating each material under the subdivisions of characteristics and composition, preparation, introduction and finishing.

Rents, fissures, holes or cavities in any object are best mended with a substance possessing the characteristics of the object itself. The other factors which govern the selection and application of a filling material are the location, environment and use of the object.

Considered as objects having holes or cavities to be mended or filled, the teeth present surfaces having great variety of form, and resembling glass or porcelain in density and color. Examination discloses that the object has a covering or shell. That this shell is made up of blocks or rods arranged upon the surface of the tooth much as blocks are laid in a pavement; the rods are held together by a cement substance. That when a hole is once made in this shell the rods or blocks around its border may, under sufficient strain, be cleaved or split off in small sections.

Further examination shows that the substance beneath this shell much resembles bone except that it is harder and more dense. That the tooth substance when denuded of its shell at any point is sensitive to thermal changes, and that in its center is a cavity or chamber which contains an organ still more sensitive. The thinness of the shell and its liability to fracture indicate that the filling for any existing cavity would better be inserted in the substance underlying the shell. This is necessary when the cavity penetrates the substance of the tooth.

From our investigations of the tooth as an object, we conclude that its characteristics demand a filling material which will present a hard surface, highly polished or enameled, bluish white or yellowish white in color, and that it must possess nonconducting properties, or be preceded by some substance which is a nonconductor.

As masticating apparatus we must consider the location of the teeth, their environment and their use. We find them situated in the oral cavity, and arranged in two rows bent in the form of an arch, with the crown of the arch presented to the opening of the cavity. The arches are hinged at their base in such a manner as to permit the teeth to separate some two and one-half inches at the widest point. The teeth are close together, and practically immovable in their sockets. As cavities appear upon all surfaces, there are many to which access is difficult. These conditions demand that filling materials be capable of introduction piecemeal, or in a plastic condition; and to fulfill the requirements indicated under characteristics, the material must form a homogeneous mass not subject to such molecular change as would affect its integrity.

Further observation reveals the fact that the cavity in which the teeth are situated is warm and moist and that substances are taken into it which undergo chemical change; that portions of the surfaces of the teeth are constantly in contact with the results of these changes. Hence another quality is demanded of a filling material, the ability to resist chemical solution.

Lastly, we observe that as the two rows or arches come in contact with each other in the act of mastication, the cutting or grinding surfaces are subjected to more or less wear. For this reason filling materials for cavities on these surfaces must have the ability to resist mechanical abrasion.

To summarize, filling materials must possess density and hardness, tenacity, resistance to strain or wear, low conductivity, ease of introduction, freedom from chemical action, freedom from molecular change, capability of polish, and a color which will harmonize with or make a pleasant contrast to tooth color.

The materials to consider, are gold, amalgam, tin, cement, and gutta-percha. As much knowledge of gold and tin is gained from a study of amalgam alloys, they will be considered first.

AMALGAM.—A combination of a metal or an alloy with mercury, by the mercury. Amalgams must be considered as alloys in which all or part of the combination or mixture has been accomplished by the mercury. Amalgam alloys should be composed of such metals as will form an amalgam having density, tenacity, good plasticity, low conductivity, freedom from the action of such chemical agents as are found in the oral cavity, and having such fusing points and behavior in hardening as to overcome, in the greatest degree, the spheroidal tendency imparted by the mercury.

ALLOY.—A combination (fusing together) of two or more metals by heat. "An alloy is either (1) a solution of one metal in another, (2) a chemical combination, (3) a mechanical mixture, (4) or a mixture of two or all of the above." (Matthiessen.) Solutions retain to a greater or less extent, the properties of their component parts as do mechanical mixtures. Chemical compounds are generally formed in definite atomic proportions, and exhibit properties differing from either of their components. Nearly all alloys belong either to the 3d or 4th class of Matthiessen. Tenacity is usually higher in an alloy than that of its components. Malleability and ductility, are usually lessened in alloys. Conductivity is usually lower in alloy than that of its components.

To give the greatest amount of information in small space the following tables are presented, the metals employed in amalgam alloys are arranged in the order of their importance; under proper heads are given the properties or characteristics which may exert an influence in the resultant compound. When the relative rank is given, the grading applies only to the metals enumerated in their relation to each other.

NAME.	LATIN TERM.	SYMBOL.	SP. GR.	FUSING PT. (F.)	EXPANSION.*
Mercury	Hydrargyrum	Hg.	13.5	39°	....
Silver	Argentum	Ag.	10.4	1873°	4th Rank
Tin	Stannum	Sn.	7.29	442°	3d "
Copper	Cuprum	Cu.	8.94	1996°	5th "
Gold	Aurum	Au.	19.26	2016°	6th "
Zinc	Zincum	Zn.	7.20	773°	2d "
Platinum	Platinum	Pt.	21.50	above 3500°†	8th "
Cadmium	Cadmium	Cd.	8.54	442°	1st "
Antimony	Stibium	Sb.	6.71	842°	7th "
Palladium	Palladium	Pd.	11.80	above 3500°	9th "

(* When raised from 32 to 212 F.) († In oxyhydrogen flame.)

NAME.	TENACITY.	MALLEABILITY.	DUCTILITY.	CONDUCTIVITY.	
				HEAT.	ELECTRICITY.
Mercury....	....	....	....	....	....
Silver.......	3d rank	2d rank	2d rank	1st rank	1st rank
Tin.........	6th "	4th "	7th "	5th "	5th "
Copper.....	1st "	3d "	4th "	2d "	2d "
Gold.......	4th "	1st "	1st "	3d "	3d "
Zinc.......	5th "	7th "	6th "	4th "	4th "
Platinum...	2d "	6th "	3d "	6th "	6th "
Cadmium...	7th "	5th "	8th "	....	....
Antimony...	brittle	brittle	brittle	....	....
Palladium...	2d rank	8th rank	5th rank	....	....

Note.—The electrical state of all the metals except mercury is positive.

SOLUBILITY.

Mercury—Soluble in dilute nitric, and hot sulphuric acid.

Silver—In nitric and hot, strong sulphuric acid.

Copper—In hot mineral acids; slowly attacked in air and moisture by vegetable acids, alkalies, and saline solutions.

Gold—In aqua regia; not affected by single acids or alkalies.

Zinc—In dilute acids, and solutions of the alkaline hydrates.

Platinum—Is dissolved slowly in aqua regia.

OXIDATION OR CORROSION.

Mercury—Not affected by air or moisture.

Silver—Not acted upon by air or water; but readily by sulphuretted hydrogen.

Tin—Oxidizes very slowly.

Copper—In moist air becomes coated with a green carbonate; is tarnished by sulphuretted hydrogen.

Gold—Unaffected by air, water or sulphur.

Zinc—Tarnishes slowly; is coated with carbonate in moist air.

Platinum—Unaffected by air or water.

Cadmium—Tarnishes slowly in air and sulphuretted hydrogen.

Antimony—Oxidizes badly when amalgamated.

Palladium—Does not oxidize easily, but is acted upon by iodine.

COMBINATION WITH MERCURY.

Silver—Forms definite crystalline chemical compounds with mercury.

Tin—Unites with mercury in atomic proportions, forming a weak crystalline compound. (Kirk). Mitchell says it does not.

Copper—Does not form definite compounds with mercury; but in the form of crystals, is dissolved by it in varying proportions.

GOLD—Is dissolved by mercury in all proportions; but does not form a definite atomic compound.

ZINC—Unites with mercury in atomic proportions.

PLATINUM—Only unites with mercury when reduced to a spongy condition.

PALLADIUM—The union with mercury is probably chemical.

COMBINATION WITH OTHER METALS.

MERCURY—Dissolves all metals but iron.

SILVER—Has affinity for platinum.

TIN—Has affinity for gold and platinum.

COPPER—Unites with zinc in all proportions; and in certain proportions forms definite compounds.

GOLD—Unites with silver in any proportion; and is rendered very brittle by the least trace of antimony, palladium or lead.

ZINC—Unites in all proportions with gold and tin; forms chemical compounds with platinum.

PLATINUM—Unites in definite proportions with silver and cadmium.

NAME.	COLOR.	CONSISTENCY.	CRYSTALLIZATION.*
MERCURY.	Silver white, lustrous.	Fluid at ordinary temperatures.	Spherical above 39° F.
SILVER.	Pure white, lustrous.	Soft between Gold and Copper.	Regular system.
TIN.	White, brilliant.	Soft.	Quadratic system.
COPPER.	Red.	Soft, hardens by hammering.	Regular system.
GOLD.	Yellow, lustrous.	Soft, hammering or burnishing hardens.	Regular system.
ZINC.	Bluish white.	Brittle unless heated and rolled.	Rhombic system.
PLATINUM.	White, tinged with blue.	A little softer than copper.	Practically amorphous.
CADMIUM.	White, with blue tinge.	Between tin and zinc.	Regular octahedrons.
ANTIMONY.	Bluish white.	Hard; brittle.	Rhombic system.
PALLADIUM.	White.	Hard as platinum.	Regular system.

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*"Regular crystals expand equally in all directions; rhombic and quadratic ores expand differently in different directions."—*Enc. Brit., Vol. XVI., p. 64.*

PROPERTIES IMPARTED TO AN ALLOY BY THE VARIOUS METALS.

MERCURY, being the controlling metal, imparts its spherical tendency to the amalgamated mass; especially in those alloys which are "solutions," or "mechanical mixtures." This tendency is greater with those metals having a low fusing point, cooling slowly, and when amalgamated setting slowly, as tin; and less with those which melt at a higher temperature, cool quickly, and set quickly when amalgamated, as silver and copper.

SILVER controls hardening or setting because of its crystalline form and chemical affinity for mercury; it maintains the bulk integrity of the filling, and should be the largest component of an alloy. The silver sulphide formed by the action of sulphuretted hydrogen is supposed to have prophylactic action against decay.

TIN should be next in quantity, because it increases plasticity, prevents discoloration, and reduces conductivity. It also retards setting, reduces edge strength, and favors spheroiding; hence, should not be used in such proportions as to become the controlling metal.

COPPER diminishes shrinkage, hastens setting, and adds to the present and possibly to the permanent whiteness of the filling. It is also supposed to have greater compatability with tooth substance and pulp tissue than other metals, and has been shown to have antiseptic action.

GOLD lessens shrinkage, resists corrosion, increases edge strength, increases smoothness and plasticity, and hastens setting; all these to a greater degree in small quantities than any other metal, 5 to 7 per cent being all that is advantageous to use.

ZINC controls shrinkage, hastens setting, improves color, and imparts a peculiar smoothness in mixing.

PLATINUM—Authorities differ in regard to the influence of this metal; some claiming that it increases setting, hardness, stability, and improves color; while others contend that it imparts no properties which cannot be obtained by a judicious combination of other metals; which seems to be true.

CADMIUM having been proven to be dangerous to pulp vitality, should never be used.

ANTIMONY blackens so badly that the properties of controlling shrinkage, and increasing plasticity which it imparts, do not seem to be of sufficient advantage to warrant its employment.

PALLADIUM does not improve alloys, but amalgamated alone with mercury, furnishes an amalgam which does not shrink or discolor, but its expense hinders its universal use.

It is an open question whether freedom from discoloration is a desirable attribute; it is certainly true that cavity surfaces under leaky fillings which have become coated with a black oxide or sulphide, have remained free from decay for years. We hold that unsightliness is the principal objection, unless such chemical compounds are formed as will cause wasting of the filling or prove detrimental to the health of the patient.

Since these tables were prepared aluminum has been introduced as a constituent of amalgam alloys. Its sp. gr. is 2.6; the lightest of the metals. Fusing point, 1300°F. Its tenacity, in proportion to its weight, is equal to steel. Malleability next to silver. Ductility next to copper. Conductivity about the same as copper. It does not oxidize or corrode and prevents oxidation when combined with other metals; but only a small per cent can be combined in an alloy. It is not readily acted upon by mercury. In amalgam alloys it is supposed to whiten them and prevent discoloration.

An amalgam is produced by precipitating pure copper, in the form of crystals, from a saturated solution of sulphate of copper into mercury, in which form it is capable of solution in mercury. This precipitation is accomplished by galvanic action or by placing a rod of iron in the solution. The galvanic method is preferred When the solution has been carried to the limit, the mass is put in a wedgewood mortar and triturated thoroughly; the surplus of mercury is removed by squeezing in a chamois skin bag. This process is repeated, resorting to heat to soften the mass, as it becomes necessary, until amalgamation is complete; it is then moulded into small ingots and allowed to harden. As this preparation possesses characteristics peculiarly its own it will be considered apart from ordinary amalgams.

The qualities which commend amalgams are density, hardness, ease of introduction, and cheapness. The objections to it are its color, or rather its disposition to discolor, a lack of ductility and tenacity—edge strength—a tendency to molecular change in hardening, a liability to chemical or electrical changes in the mouth, and its conductivity. Compatibility with tooth substance and prophylactic action are disputed points.

Density and hardness are qualities which all amalgams possess to a degree which enables fillings to withstand all strain and wear to which they are likely to be subjected, and to receive a perfect finish.

Ease of introduction, which is probably its strongest recommendation, is liable to abuse, as its peculiarities demand the greatest care in its manipulation. Cavities should be as thoroughly prepared for its reception as for gold. It should be as carefully introduced, condensed, and finished as is gold. When this is done its other advantage, cheapness, is greatly modified. Cheapness should be the last quality considered. It is better to fill teeth well with amalgam than to allow them to be lost because the patient cannot afford gold, but ordinarily the choice of materials should be based on higher considerations.

Color, while classed as an objection, is frequently an advantage; an oxidation of the surface having been proved by clinical experience to exert a prophylactic action against decay.

Lack of that ductility or tenacity which results in crumbling of the edge next the margins of the cavity, is a fault which can be overcome in cases where enamel margins are strong and cavities can be shaped as in Fig. 190; but where enamel margins are frail or must be shaped as in Fig. 189, few amalgams have sufficient tenacity—edge strength—to resist the force of mastication. It is also difficult to insert and finish amalgam perfectly where the enamel bevel is long.

Liability to molecular change is the objection most difficult to overcome. Reducing metals to a plastic condition by mercury is somewhat similar to fusing them by heat; in either process, as metals lose their solid form the molecules change their position—separate; coming together again as the mass regains its solidity. These are natural conditions over which we have but limited control.

Chemical and electrical changes are certain to result when the conditions of the mouth are favorable. A thorough knowledge of chemistry and the intelligent application of its principles, alone can combat this objection.

Compatibility and prophylactic action are qualities which depend almost entirely upon chemical action; whether this action exerts a good or evil influence depends also upon the recognition and careful observance of chemical laws.

Conductivity is an objection which can be overcome in most cases by the insertion of a nonconducting "intermediate."

The extent and manner in which its weak points may be overcome has already been stated, except that of molecular change. The results of the many experiments which have been made seem to indicate that the change incident to crystallization must be reduced to the minimum. First, the alloy must be one which, when amalgamated, crystallizes under the regular system; second, the mass must have a minimum of mercury, or it must be introduced after crystallization has begun. After choosing an alloy in which the change from crystallization is small, the best results are obtained by expressing all the mercury possible, driving the molecules into the closest possible apposition.

In mixing, the smallest amount of mercury should be used which will amalgamate the alloy; the mass should be thoroughly mixed in a mortar, that the mercury may come in contact with every particle of the alloy; any surplus mercury may be expressed by squeezing in chamois skin with strong flat nose pliers. The mass should be introduced into the cavity in small pieces, and thoroughly condensed with instruments having convex faces; any surplus mercury should be taken up as it appears on the surface; very dry pieces should be used in finishing, warming the instruments if necessary.

Copper amalgam is prepared for use by slowly heating one of the ingots in an iron spoon until globules of mercury appear upon the surface, when it is triturated in a mortar. The subsequent manipulation is similar to that for other amalgams. In copper amalgam the tendency to molecular change is slight; thus one of the greatest objections to amalgam is overcome. It has also great edge strength. The experiments of bacteriologists show that it has marked antiseptic action. It is easily manipulated and has a bright silvery appearance when finished. In some mouths it turns black and sometimes blackens the surface of all other metallic fillings in the mouth as well as the teeth themselves. When it turns black it retains its bulk integrity and preserves the teeth. When it retains its silvery whiteness it wastes away; in some cases the surface softens so much that it can be scraped off with the finger nail. This uncertain behavior has led to its abandonment to a great extent. The conclusions seem to be that it is not wise to employ copper amalgam where there are other metallic fillings, or in mouths in which there is much chemical decomposition.

The deductions we draw from this study of amalgam are, that considered under the requisites for a filling material, it possesses sufficient density and tenacity to resist attrition and strain, and sufficient edge strength where enamel margins can be properly prepared; that it transmits thermal changes so readily that an "intermediate" is necessary where the tooth is sensitive to such changes; that because of its plastic condition it is very easy to introduce; that it is susceptible to chemical changes to such extent that this tendency must not be ignored, in any case where the elements conducive to such changes exist; that its tendency to molecular change must be combated in every way possible; that it is capable of receiving the necessary finish, but that its color and tendency to discolor give results which are neither harmonious, nor a pleasant contrast to tooth color; hence it is not suitable for cavities which are exposed to view.

TIN.

The qualities of tenacity, ductility, malleability, conductivity, oxidation or corrosion, color and consistency, have been considered in the tables. Tin for filling teeth must be pure. It is prepared for dentists' use by beating or rolling it into foil, which is put up in books of uniform size. The number indicates the weight or thickness of a leaf; the numbers are 2, 4, 6, 8, 10, 30, 60 and 120. The heavier numbers only are rolled. For introduction into cavities, strips of the foil are rolled in a napkin, twisted into ropes or folded into ribbons; cylinders are made by rolling the ribbons upon small smooth broaches. It is also prepared for fillings by fixing a round ingot in the lathe and turning off shavings for immediate use. It is claimed that tin is cohesive when prepared in this form. As tin possesses to a limited degree, if at all, the property of cohesion, or welding without heat, its homogeneity depends upon wedging or interdigitation. On this account it can only be employed in cavities of class 1, or of division A, class 2, and in those cavities of division A, class 3, where the marginal ridge is not involved, *i. e.*, cavities must have continuous walls.

Density and hardness. Considered under the demands for a filling material we find that tin fulfills the first requisite, density, to only a limited extent, and it is not sufficiently hard to withstand the wear of mastication.

Tenacity is lacking to a degree which precludes its use in those cavities where restoration of contour is demanded and it cannot be used in cavities having such enamel bevel as is shown in Fig. 189.

Low conductivity. Platinum excepted, tin is the poorest conductor of the metals employed for fillings. For this reason it may be used in those cavities which are so sensitive to thermal changes as to render the use of gold or amalgam unwise.

Ease of introduction. With proper instruments, a proper preparation of both the cavity and the material, tin may be introduced with much facility into such cavities as are easy of access.

Freedom from chemical action. While tin corrodes slightly, and in some mouths considerably, it is not readily acted upon by the fluids of the mouth.

Freedom from molecular change. As the crystallization of tin is not interfered with in its introduction, there is no subsequent change in its bulk integrity

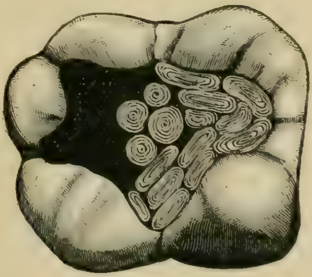

Fig. 231.

Capability of polish. While a tin filling may be given a highly burnished surface, it does not retain it, because of the softness of the material.

Owing to its inherent qualities, tin is somewhat limited in its application. Its use is not indicated for large cavities on occlusal surfaces which are subjected to much wear. Its use is not indicated in those cases where lost contour must be restored, or for proximate fillings where its surface might be roughened or disturbed by efforts at cleansing with toothpicks. It may be used to advantage in children's teeth and in all cases where the use of gold is not indicated or where it is undesirable to use amalgam.

Cavities must be formed for its reception as is shown in Fig 190½, a. a., with no more enamel bevel than is absolutely necessary for its protection.

Plugger points for the insertion of tin should be wedge shaped, with sharp and deep serrations. When the wedging is complete, the surface may be condensed with convex faced foot pluggers having smoother and shallower serrations. Finally the filling may be burnished, the surplus trimmed off with sharp instruments, and again burnished. Tin fillings may also be finished with files, emery or sandpaper disks and strips of increasing fineness until the proper polish is obtained. Fig. 231 shows the manner of placing and condensing cylinders in the cavity. Each cylinder is condensed against those which have preceded it; the operation is continued until only a small space is left in the center; this space is filled by wedging small cylinders into it.

Fig. 232 shows the manner of inserting a rope or ribbon by doubling it upon itself. In the insertion of either preparation of tin, the filling is arranged in concentric layers; is solidified by crowding each layer against those which have preceded it, always exerting the force toward the walls of the cavity. The cylinders or folds should project above the walls of the cavity sufficiently to permit of condensing and finishing.

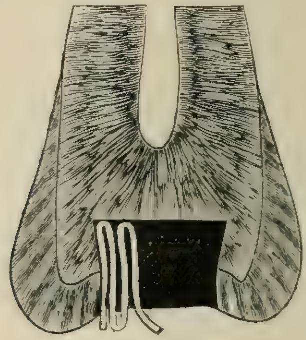

Fig. 232.

GOLD.

The tables show that gold possesses tenacity, malleability, ductility, and conductivity in a marked degree; that it does not oxidize or corrode; that while it is a soft metal, it becomes hard by hammering, rolling, or burnishing; and that its color contrasts more agreeably with the color of the tooth than does any other of the filling materials.

Density and hardness. Gold is sufficiently hard and dense to enable it to withstand the wear to which it is subjected.

Tenacity, resistance to strain. These qualities, together with malleability and ductility, are possessed by gold to such an extent that it not only resists strain when employed to restore lost contour, but it is possible to use it where the enamel bevel is necessarily long; a combination of qualities possessed by no other material used for filling teeth.

Low conductivity. Gold is the best conductor of the filling materials, consequently it oftener demands a nonconducting "intermediate."

Ease of introduction. It is generally conceded that gold is the most difficult material to manipulate, yet when its qualities are thoroughly understood, it responds readily to careful and intelligent effort.

Freedom from chemical action. It is not affected by any chemical action present in the mouth.

Freedom from molecular change. There is no change in the integrity of a gold filling after its proper condensation.

Capability of polish. Gold is capable of receiving either a burnished or a polished surface.

Good color. It is not harmonious in color with the teeth, but its peculiar yellow color forms a pleasant contrast.

In addition to these qualities it possesses the property of cohesiveness. Its freedom from oxidation makes it possible to unite separate pieces of gold by pressure without the aid of heat; heat is used only for the purpose of burning off impurities and softening the gold.

From the foregoing it appears that the popularity of gold as a filling material is based upon the fact that it fulfills more of the requirements for a filling material than any other substance employed.

Gold for use in filling teeth must be as nearly chemically pure as it is possible to make it. The greater amount comes to us in the form of foil, or cylinders and blocks made from foil. There are several other preparations produced by reducing gold to its crystalline state, under various processes and bearing various names, as crystal, sponge, crystal mat, etc. Only foil and the various forms in which it is prepared for use will be noticed.

Gold foil is prepared by beating or rolling (rolling for the heavier numbers only), and is put up and numbered in the same way as tin foil. Unlike tin, gold foil is supplied in several grades —one, in which the natural cohesive quality of gold has been destroyed by some process; this is known as noncohesive. Another, in which this property of cohesion is destroyed only in part—this is known as semicohesive. The other form is that in which the cohesive property is retained to its fullest extent; this is known as cohesive, or extra cohesive. Manufacturers mark their products as "soft," "semicohesive" and "cohesive" or "extra cohesive." The term "soft" is a misleading one. Softness is not synonymous with noncohesiveness. All of the grades may be, and are, under the best processes of manufacture, soft; this is a natural property of gold before the particles are driven into closer contact by condensation. Gold which has been made hard by condensation may again become soft by heating to redness. This is independent of the cohesive property. Pellets, blocks, or cylinders of gold in which the cohesive quality has not been destroyed, become hard more quickly under manipulation than do those which have been made noncohesive; this is because the particles of cohesive gold stick together at all points where two surfaces come in contact, while the surfaces of noncohesive gold slip or slide upon each other.

The fullest exhibition of the cohesive property depends upon the absolute cleanliness of the surfaces. Moisture, fatty matter, or gases, especially sulphuretted gases, modify or completely destroy cohesion. To insure the absence of any or all of these, the gold is heated to redness over a flame in which combustion is complete. This is called annealing; its purpose is two-fold; first, to cleanse the surfaces; second, to secure the fullest degree of softness. If there is any doubt of the perfect combustion in a flame, the gold may be heated in a mica tray.

The principles governing the introduction of noncohesive gold are the same as those governing the introduction of tin. Because of the hardness which is possible in a noncohesive gold filling, the range of cavities where it may be employed is much greater than for tin. As has been stated, the amount of inherent strength necessary to the filling in any given cavity is equivalent to the amount of strain to which the filling is subjected; this governs the amount of cohesiveness necessary in the gold for any given cavity. Those cavities where lost contour must be restored, usually require the full extent of the cohesive property. Where density of surface is required and the mass of the filling is subjected to little strain, a noncohesive filling may be faced with cohesive gold. This is accomplished by mechanical union between the noncohesive and the cohesive—*i. e.* a layer of cohesive foil is interdigitated with the noncohesive mass. This method is applicable to cavities of class 3, whose axial depth is great. These cavities when prepared as in Fig. 226, have retaining shape throughout their whole depth. The cohesive gold need only be employed to a depth necessary to allow of a sufficient mass of cohesive gold to be retained in the cavity, and to resist the strain brought upon it. This is illustrated in Fig. 233.

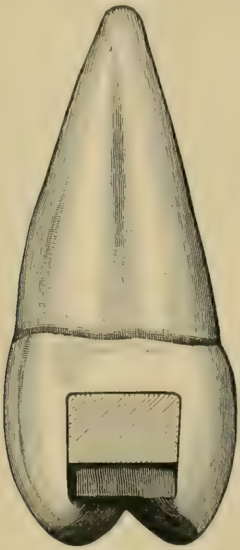

Fig. 233.

The advantages of noncohesive gold are that it is more readily adapted to the walls of the cavity, and it can be introduced in larger pieces and be perfectly condensed in a much shorter time, thus saving fatigue to both patient and operator. The same instruments for wedging, condensing, and finishing are employed for noncohesive gold as for tin. The instruments for cohesive gold should have fine shallow serrations and possess such points as are shown in Figs. 130 to 146. Owing to the tendency of the surfaces of cohesive gold to stick together, force should be exerted in such direction, and instruments employed having such faces as will insure the perfect adaptation of each layer to the walls of the cavity.

Gold foil is prepared for insertion into cavities in the same forms as tin. Where the cohesive property is retained, the individual pellets, ribbons, blocks, cylinders, or mats should be of looser structure, also flatter and smaller than for noncohesive gold or tin. Cohesive gold fillings are made by uniting the separate pieces, layer upon layer, thoroughly condensing each layer before another is added.

The only combination with other metals to be noticed is gold and tin. The two foils are combined in blocks or cylinders so that the layers of gold and tin will alternate; the tin should never predominate. This combination is useful at the cervical third of large cavities of Class 3.

Zinc Plastics.

Oxychloride of Zinc	Powder, calcined oxide of zinc. Liquid, deliquesced chloride of zinc.
Oxyphosphate of Zinc	Powder, recalcined oxide of zinc. Liquid, deliquesced glacial phosphoric acid.
Oxyphosphate of Zinc,—with gelatinized liquid for capping.	
Oxysulphate of Zinc	Powder, calcined oxide and calcined sulphate of zinc. Liquid. gum arabic and sulphite of lime dissolved in distilled water.
Dickinson's Capping	Powder, oxide of zinc and iodoform. Liquid, beechwood creasote and eugenol.

As none of these preparations can be considered as permanent filling materials, their response to the requirements of a filling material will be summed up as follows. They have sufficient density and hardness, have low conductivity, are easy to introduce, do not change in bulk integrity, and have good color. They lack in tenacity, resistance to strain or wear, receive only an indifferent polish and are soluble in the fluids of the mouth.

Oxychloride. As this preparation has been proved to be so temporary in its nature, it is used only where its peculiar power to prevent decomposition of devitalized tissue is desirable; as for filling root canals in which the pulps were putrescent, or as a lining or temporary filling, where its ability to obtund sensitive dentine by destroying the terminals of the fibrillæ, make it advantageous. Its combination is a chemical union, and it should be thoroughly mixed upon a glass slab, to the consistency of cream for canal fillings, and to a putty like mass for linings and temporary fillings. As it is white in color it is useful as a lining in teeth which have been bleached, or in large cavities where the gold or other filling material will show through the enamel if some lining material is not employed.

Oxyphosphate of zinc is harder, better resists wear, and is less irritant to vital tissues. It is, however, soluble in certain fluids of the mouth, notably in the mucous secretions. Its union is a chemical one, but it does not unite so readily as oxychloride; the powder should be added to the liquid in small amounts, thoroughly spatulating or kneading the mass, with force. It should be mixed to a putty-like mass, unless it is to be introduced without pressure, as when it is used as an "intermediate" over a pulp capping, when it must be of the consistency of cream. There are many preparations of varying excellence; the best results seem to be obtained from those in which the powder is finely pulverized, is heavy, and breaks apart, falling in masses, as the bottle is revolved, and those in which the liquid is thick and syrupy in appearance and sticky in feeling. Samples possessing these characteristics, and which mix unwillingly but make a fine smooth mass, so sticky that it is removed from the slab and spatula with difficulty, and losing this stickiness if rolled a little in the fingers, rebounding with a metallic ring when a pellet of it is dropped upon any hard surface, and breaking with difficulty after fifteen minutes, showing a clean fracture, generally wear well if they are carefully introduced and finished, and the moisture is excluded until the mass is hard.

Oxyphosphate with gelatinized fluid, oxysulphate of zinc and Dickinson's material, are not filling materials, but are intended as nonirritant, antiseptic pulp protectors or cappings. They are useful in all cases of exposure or where a thin layer of semidecalcified dentine remains over the pulp. They are used in conjunction with asbestos paper or a metal cap.

GUTTA-PERCHA.

This product of the gutta-perch tree is too tough and unyielding in its natural state, to be utilized as a filling material. For dental use, oxide of zinc or some earthy matter is incorporated with it. It comes to us in two forms, pink, which is used for base plates, and white, the white in several grades. It has sufficient density, tenacity and strength for ordinary purposes but not sufficient to resist the strain and wear of mastication. It is an absolute nonconductor. It is easy to introduce. While it is free from chemical action, it becomes soaked and rotten after long exposure to the oral fluids. Being introduced warm, it shrinks in cooling. Although incapable of polish, the so-called white varieties harmonize well with tooth color. Its characteristics make it one of the best "intermediates," as well as one of the best canal filling materials, where too much bulk is not required, but precludes its use as a permanent filling, except in cavities upon buccal surfaces of molars and bicuspids. It is also very useful in deciduous teeth. The white gutta-perchas are prepared in three grades, "low heat," "medium," and "high heat." The degree of heat necessary to soften it depends upon the amount of oxide or other substance which it contains. The several grades soften as follows:

"Low heat"	softens	at	from	140.°	to	200.°F.
Pink, base plate	"	"	"	150.°	"	180.°F.
"Medium"	"	"	"	200.°	"	210.°F.
"High heat"	"	"	"	216.°	"	230.°F.*

All those which soften below the boiling point should be softened over boiling water; the "high" grade must be softened on a glass or porcelain slab over a flame. None of the preparations should be softened in direct contact with the flame, because of the danger of burning.

Warm instruments should be used in its manipulation. The "medium" preparations seem to give the best results. The pink base plate makes the best points for canal filling. The chloro-percha which is used in pulp capping and canal filling is prepared by dissolving small shavings of pink base plate in chloroform. It has been suggested that iodoform or some antiseptic be added to the solution, but as any such substance would be so firmly fixed against solution, its efficacy seems doubtful.

PRACTICAL EXERCISES.

Before students begin their practical exercises the teacher should demonstrate each operation. The cavities, which were prepared in the large clay models with enlarged copies in brass of the instruments which the students used in cavity preparation, may now be filled; use enlarged pluggers of brass, with colored cotton rolls to represent cylinders of tin or gold, and ropes and ribbons of sheet wadding (cotton) to represent ropes and ribbons of tin or gold,* soft clay of another color, or putty may be used to demonstrate the use of plastics.

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*Flagg.

A little ingenuity will enable the teacher to vary the exercises to hold the interest of the students and to prevent the work becoming irksome.

The author is now able to present an illustration of a "rubber tooth form for use in operative technics," Fig. 234, which will take the place of the toothbrush handle; the bottom of the base is slightly convex in order that the cavities shown in Fig. 187 may be made in it. The teeth are typical forms thus giving opportunity for the formation of typical cavities. The material is much easier to cut than dentine or bone, but dense enough to give good margins. Another advantage is that the character of the material demands sharp, keen edged instruments. The teeth are placed far enough apart to permit of easy access to all surfaces, consequently the student will gain practice in contour for *form* only. Practice in contour for *contact* and the preservation of the interproximate space must be gained by filling cavities (with plastics) in teeth in the dummy articulator.

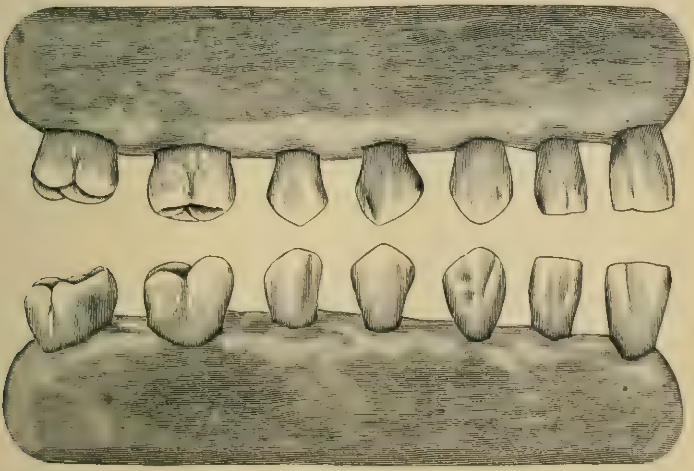

Fig. 234.

The three points of contour, contact, and occlusion should be carefully studied, taking as a basis a thorough recitation and drill of pages 130 to 153 of Black's Dental Anatomy, supplemented by the arrangement of the teeth in the dummy articulator, and by the study of models.

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*This was suggested by Dr. D. M. Cattell.

Exercise 1. Gutta-percha. The teacher selects several cavities in the teeth in the dummy articulator which the student fills with gutta-percha, pink base plate. One cavity is filled with a pellet of sufficient size to fill the cavity, which is softened over boiling water or on a Flagg's gutta-percha warmer. It is then inserted in the cavity with warm instruments, the surplus is removed and the surface finished with warm burnishers. Another cavity is filled with smaller pellets, softened as before, using cold instruments, trimming off the surplus with sharp trimmers after the mass has hardened. The surface may then be finished with a pad of cotton or spunk wet with chloroform.

It is presumed that the student has already had some experience in handling gutta-percha in his pulp protection, and canal filling exercises; but the teacher should require such further exercises as will thoroughly familiarize the student with the different grades of this valuable material.

Exercise 2. Oxychloride of zinc. After some preliminary exercise in mixing this cement, the student is required to insert some in large cavities as a cavity lining; to insert one filling, keeping it dry until the mass is perfectly set or hard, also one which he may bring in contact with saliva before it is thoroughly set; this is done that he may note the different results. Finish with lancet trimmers and sandpaper strips.

Exercise 3. Oxyphosphate of zinc. The preliminary exercise should be thorough instruction and practice in mixing this cement, making tests of the various mixes. Several varieties should be presented. Then a number of the partially prepared cavities in teeth in the dummy articulator should be filled to restore contour and contact. Fillings in cavities involving the proximate surfaces of bicuspids and molars should be inserted with the aid of Dunn's hand matrix. Some of the fillings should be protected from moisture until perfectly hard, others should be brought in contact with saliva while they are hardening, the student taking careful notes of the results in each case. Finish the same as oxychloride. Students should be allowed all the opportunity possible to become familiar with the peculiarities and possibilities of this material. If possible, the teacher with the assistance of the class should make a batch of oxyphosphate.

Exercise 4. Amalgam. Students will be much benefited if they are allowed to assist in the manufacture of an amalgam alloy and of copper amalgam. Whether this is practicable or not, they should mix amalgam, both soft and dry, and test the mixes by inserting them in glass tubes which are subsequently immersed in aniline dye. One cavity should be filled with a soft mix and one with a dry mix, which should be allowed to harden before the filling is finished. One cavity should be filled with a soft mix and one with a dry mix which should be wafered and finished at once. Wafering is the expression of all surplus mercury before the mass is inserted in the cavity. Careful notes should be taken of the results under the different manipulation. The partially prepared cavities in the teeth of the dummy will give ample practice in the inserting, contouring, and finishing of amalgam. All amalgam fillings must be carefully finished after they are thoroughly hard, with finishing strips and discs of increasing fineness.

Exercise 5. Making ropes of tin foil. Cut a leaf of No. 4 tin foil into three strips; roll each strip in a clean folded napkin; then grasping the ends with the thumb and index finger of each hand, twist into a rope, tight or loose as is desired. This preparation is applicable for gold also, except that for *cohesive* foil the roll should not be twisted. *Cohesive* gold should never be touched by the fingers.

Exercise 6. Making ribbons of tin foil. Cut the leaves of No. 4 foil as for ropes; with a paper folder fold each strip lengthwise to the desired width. This is the best form of preparation for *cohesive* gold foil.

Exercise 7. Making cylinders of tin foil. Prepare ribbons of the width desired for the length of the cylinders. Roll each ribbon on a small, square, smooth broach, holding it tight between the thumb and finger; the size of the cylinders is governed by the length of the ribbon. This form of cylinder is applicable only for tin and noncohesive gold.

Exercise 8. Tin fillings of ropes or ribbons. In cavity *C*, Fig. 187, insert a rope of tin as shown in Fig. 282, beginning at one end, pressing or crowding each fold against those which have preceded it. In folding the ropes or ribbons, be sure to leave sufficient amount protruding from the cavity to permit of condensing and finishing. When enough has been introduced into one end to insure the wedging of the mass, fill the other end in the same manner. As the two masses approach each other, that portion next the walls of the cavity should be in advance of the rest; in this way a small opening will be left in the center of the filling. After the mass has been thoroughly condensed laterally by the use of wedge-shaped instruments in this central opening it may be filled with smaller ropes. Instruments used in this exercise should be shaped as in Figs. 121, 122, 123 and 124. After the cavity is wedged full the surface should be thoroughly condensed with foot instruments having convex faces, as in Figs. 135 and 136. This exercise should be by hand pressure only. The surplus may be trimmed off with files and the surface finished with sandpaper or emery paper strips of increasing fineness, using chalk or whiting and rouge on a chamois skin strip, to polish; or the surplus may be trimmed off with sharp lancet trimmers and the surface burnished.

Exercise 9. Tin fillings of cylinders. In cavity *d*, Fig. 187, place a row of large cylinders around the circumference of the cavity, next the wall, as shown in Fig. 231, flattening them against the wall. Continue placing cylinders in concentric layers, crowding each row against those which have preceded, until only a small opening is left in the center. This opening may be filled with a conical cylinder, or with a rope, as in Exercise 8. After the cavity is full the surface must be condensed as in Exercise 8. The same instruments are used as before. The remaining cavities, *a*, *b* and *e*, may be filled, using ropes, ribbons, or cylinders of heavier foil, as the teacher may direct. One or more cavities may be filled with shavings of tin, prepared as described on page 83. A compound or double dovetailed cavity resembling Fig. 226, should be prepared in either end of the toothbrush handle or in the base of the rubber tooth form, which involves the surface and the end. One of these cavities should be filled with ropes of tin foil, the other with tin and gold ropes or cylinders for the basal two-thirds of the cavity, filling the remaining third with gold. As noncohesive gold works very much as tin does, tin instead of noncohesive gold may be used to give the students practice, but one small filling of noncohesive gold should be inserted to impress the student with the points of difference.

Exercise 10. Tin and gold. Ropes or ribbons of tin and gold are prepared by placing a strip of tin foil upon a strip of noncohesive gold foil, rolling or folding it with the tin inside of the gold. Cylinders of tin and gold ribbons may be made in the same manner as cylinders of gold or tin alone. These preparations are inserted in the same manner as described for tin in cavities which the teacher shall select.

Exercise 11. A cavity of division *A*, class 2, Fig. 216 should be filled with cohesive gold, beginning with semicohesive gold and finishing with extra cohesive gold. The gold for this exercise should be short pieces cut from ribbons made of leaves of No. 4 foil cut into four strips. All gold fillings should be finished with fine files or file trimmers, and polished with fine emery strips and rouged chamois skin strips.

In these exercises all cavities should be inspected and their form and margins passed upon by the teacher before the student is allowed to fill them. Each filling should also be inspected and passed upon before the student is allowed to proceed with the next exercise.

SPECIMEN COURSE AS USED BY THE AUTHOR.

Text-Books.
- Black's Dental Anatomy.
- Weeks' Manual of Operative Technics.

DENTAL ANATOMY.

1. Descriptive Anatomy of the Teeth.
   - Terminology and Nomenclature.
   - Notation.
   - Form.
   - Arrangement.
2. Structural Anatomy of the Teeth.
   - Macroscopic
     - Component parts, their form, proportion and relation to the whole.
   - Microscopic
     - Structure of the component parts.

Study by recitation and practical exercises.

PRACTICAL EXERCISES.—DESCRIPTIVE ANATOMY.

IN THE DRAWING BOOKS. Make outline drawings of the principal surfaces of the teeth.

Model in clay one tooth of each class.

Select a tooth of each denomination from a miscellaneous lot and arrange them upon wax for future use.

STRUCTURAL ANATOMY—MACROSCOPIC, LONGITUDINAL SECTIONS.

Select and mount upon blocks, teeth of one side of each maxilla. File the teeth thus mounted until pulp chambers and canals are exposed, broaching canals with piano wire explorer as the filing progresses.

Make prints in the printing book of every aspect of six teeth of each denomination, superior and inferior.

In longitudinal sections of $\frac{1\text{-}2\text{-}3}{1\text{-}2\text{-}3}$ only la. and m. aspects need be shown, but in $\frac{4\text{-}5\text{-}6\text{-}7\text{-}8}{4\text{-}5\text{-}6\text{-}7\text{-}8}$ b. li. m. and d. aspects should be shown.

TRANSVERSE SECTIONS.

Cut sections of teeth of one side, upper and lower, as in Figs. 9 and 10 Manual of Technics, showing form at gingival line, mid-root, and apical third. Print on the pages ruled for the purpose, as in Fig. 7, Manual of Technics. Exchange sections and print in this way six pages.

Duplicate sheets of each leaf must be furnished the teacher.

MICROSCOPIC.

Cut and mount one longitudinal and one transverse section of an incisor. Make drawing in drawing book of the several tissues as shown under the microscope.

The student needs for these exercises :

1 stick Am. Ex. sealing wax.
1 half round file, 8 inch, bastard cut, medium coarse.
1 bench vise.
1 alcohol lamp.
1 jewelers' hack saw with 12 saw blades.
1 wax spatula.
1 excelsior ink pad.
1 rubber pad, 3 in. x 6 in. x ¼ in.
1 book for printing, open at end. Leaves ruled as in Figs. 6 and 7, Manual of Technics.
1 drawing book.
Some fine canal explorers.
Some fine sandpaper, 0 and 00.
1 toothbrush.
1 yard cotton cloth.

1 salt mouth bottle with cork.
1 large ointment jar.

To insure uniformity, and to give students advantage of lowest prices, these materials are to be had at the desk.

The teacher provides the teeth for cutting, and the blocks for mounting ; also paper tablets same texture, size and ruling as books, and some tablets of similar paper for experimental printing, and clay for modeling.

OPERATIVE TECHNICS.

I.	Instruments.	Classification according to form and uses. Action or use for each form.	
II.	Canal.	Gaining entrance to canal. Removal of pulp. Cleansing and preparing canals. Filling canals.	
III.	Cavities.	Classification from location and causes. Preparation on principles governing.	
IV.	Pulp Treatment.	Conservative.	Treatment and protection. Capping.
		Radical.	Surgical devitalization. Devitalization by drugs.
V.	Filling Materials.	Characteristics and composition. Preparation. Introduction into cavities. Finishing fillings.	

Study by recitation from Manual of Technics, with practical exercises.

PRACTICAL EXERCISES.

Arrange in dummy articulator the teeth selected from miscellaneous lot.

Apply rubber dam in the several ways.

Wrap broaches.

Gain entrance to canals in one incisor, one bicuspid and two molars, removing pulp from same.

Cleanse and prepare canal for filling.

Fill the canals thus prepared.

Prepare cavities as in Fig. 187, Manual of Technics, in toothbrush handle or celluloid teeth.

Prepare cavities of each division of the several classes, in teeth in the articulator.

Treat and cap two or more exposed pulps.

Fill the cavities in toothbrush handle with tin.

Fill the other cavities prepared:

Two or more with gutta-percha.
" " " zinc phosphate.
" " " amalgam.
" " " gold.

All remaining cavities are given proper marginal outlines and the contour of the teeth restored with oxyphosphate or gutta-percha.

Instruments for this work as per list.

Filling materials and medicaments furnished at the desk.

Recitations every session.

Written quizzes are given upon completing each division of a topic and marked.

Marks are given on the cutting of sections, silhouette printing, drawings and operations.

These markings, averaged with those of the final examination, determine the standing of the student.

The examination in dental anatomy is given when the work is completed. That in operative technics at the close of the term.

In the last half of the second semester, those students who have an average of 80 per cent, or above, in their practical work, are permitted to enter the infirmary, to put in practice under the direction of the clinical professor, the principles which have been acquired in the technic laboratory.

No student will be permitted to begin practical work unless provided with the instruments and other necessaries required by the college.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Club.

The regular monthly meeting of the Chicago Dental Club was held at the Tremont House, June 25, the President, Dr. W. H. Taggart, in the chair. A paper on "Hobbies" was read by Dr. Arthur B. Freeman.

DISCUSSION.

Dr. Byron S. Palmer: In opening the discussion of the paper before us this evening, my first criticism would be the doctor's definition of the word "Hobbies," in distinction from "Fads," for he says "Hobbies then may be said to be thoughts, ideas, or modes, which have been stepping stones to *useful, practical methods* or *systems*." If this be true, the Arthur method of separation, immediate root filling, the germ theory, etc., which he says are hobbies, must be stepping stones to progress; while in his paper, he really takes the ground that they are not.

While it may be true that hobbyists are the cause of much of the progress in dentistry, it is also true that they have been most serious obstructionists, to rational and scientific progress. Jenner was *not* a hobbyist in the least sense of the word. He was a scientist of the most thorough and practical kind. Not only did he make use of all the facts known to the scientific world to prove the *truth* of his theory of vaccination, but all the knowledge of science was used just as vigorously to disprove them. This is just the difference between the hobbyist and the rest of mankind. Did you ever know a hobbyist to try to disprove a pet theory? Whatever may be found to serve as a support for his theory will be grasped as a most delicate morsel, but that which might have an opposite effect, is most carefully and purposely avoided.

Our essayist need make no apologies for not having been a practitioner at a more opportune time, for never have hobbyists been more numerous than to-day. The single class with abnormally developed anæsthetic proclivities are sufficient to put to shame those of any or all earlier times.

Even granting that root canals may be just as thoroughly filled without the dam (as the essayist *pretends* to believe) there are other reasons, which it seems to me, make its use a necessity in almost every case. It is much more convenient as it relieves both the hands and the mind of the operator from fear that the work may be flooded at a most unfortunate time, the operator can work much more rapidly, and finally it seems a necessity to me that a root canal or a tooth cavity must be thoroughly dry and kept in that condition until the operation is complete, in order to get the best results possible. Our essayist claims that "wherever irritation or failure has followed root filling, it was directly traceable to mechanical irritation by the material used, *provided* the membrane was in a healthy or normal condition when the operation was undertaken." His *provision* was well put in, for what per cent of the root canals we fill to-day can we say that we know the surrounding tissues are in an absolute state of health. We may say we *believe* them to be, but that is all. No matter how much or how little the treatment of some cases, or of what the treatment may consist, I presume there have been cases in the experience of almost every dentist where irritation and kindred troubles have followed, in which the root filling has played no part whatever.

The germ theory is a much discussed one of the present day. I believe with the essayist, that it may well be called a hobby. As to microbes being the cause of caries of the teeth, there is much yet to be proven before it can be accepted as entirely plausible. There are others here far more capable of discussing this point, and I gladly leave the field to them.

Dr. John S. Marshall: It is very evident, Mr. President, that the essayist of the evening intended to make a "rattling among the dry bones in the vale of Jehosaphat." The paper attacks so many of the recognized methods of practice and procedure, that I am sure it will provoke a lively discussion, and this is what I am sure Dr. Freeman desires. If I could remain through the evening with you, which I am sorry that I cannot do, there are several questions which I should like to talk upon. I shall, however, be obliged to confine my remarks to a defense of antiseptic methods in surgery. Without the presence of the pus microbe there is no suppurative inflammation. This is true beyond the shadow of a doubt. There are two ways in which pathogenic microörganisms may cause suppurative inflammation. The first is by entrance into the tissues direct, at the point of injury; the second is through the circulation, they having gained admission to the blood through some prëexisting abrasion of the cuticle, or inflammation. Dr. Freeman says that his physiologies never taught him that microörganisms were ever found in the blood except in pyæmia. I should like to know whose physiology he studied? Pathology certainly would teach him that various forms of pathogenic microörganisms are found in the blood besides the pus producing microbes of pyæmia with its tendency to the formation of metastatic abscesses.

(In answer to a question). The pus microbes do not multiply readily in the blood for the reason, it is thought, that the blood is an alkaline fluid, and it contains numerous cells termed phagocytes, which destroy microörganisms. It has been demonstrated that the blood serum possesses germicidal properties, and it is thought that the leucocytes, white blood corpuscles, have the same properties.

I would not dare to treat a surgical case or an alveolar abscess without strict antiseptic precautions, for the dangers are too great of establishing septic poisoning. Antiseptic drugs are not always necessary in the treatment of such cases. I am not much in favor of trying to kill germs after they have gained an entrance to the tissues, but I do believe in the possibility of preventing their entrance at the time of operation and during the aftertreatment and dressings. Thorough sterilization is thorough antisepsis. Thorough sterilization cannot be practiced upon a root canal with the same degree of success without the rubber dam as with it. Antiseptic treatment is not however universally successful in surgery or dentistry. But this is not the fault of the treatment or rather the principle of the treatment, but of the method or of the impossibility to thoroughly apply the principle. It often happens in surgery that upon opening a cold abscess under strict antiseptic precautions that an acute inflammation is immediately established and often threatens the life of the individual from the entrance of microörganisms into the circulation. I should like to ask Dr. Freeman how he explains the fact that upon opening a pulp canal in which the pulp has been dead for months or years and has never given trouble and is only annoying on account of the change in the color, that an active inflammation should be established in the apical tissues in the course of twelve to twenty-four hours after it has been opened? The only explanation to my mind is the entrance of microörganisms which produce septic poisoning, and this in spite of antiseptic treatment.

The pus producing microbes do not grow well except in a specially prepared soil. The tissues are in this special state when for any reason injury, preëxistent inflammation, imperfect nutrition, etc., the vital resistance of the part has been lowered. Healthy tissues resist this action just as a healthy individual will often resist the invasion of his organism by the germs of scarlet fever, diphtheria, typhoid fever or cholera. But on the other hand if his organism is not in a normal condition his chances are very much greater for contracting the disease to which he has been exposed.

Clinical surgery has demonstrated to a positive certainty the great value of antiseptic treatment. I wish I had time to dwell upon this. Antiseptic treatment includes asepsis—absolute aseptic conditions are not possible but the approach to such a condition has revolutionized operative surgery.

Dr. A. E. BALDWIN :—*Mr. President, Ladies and Gentlemen :*— This is a subject that I have thought upon a great deal, and I thoroughly favor hobbies ; better a poor hobby than none.

I had the privilege of hearing this paper read before its presentment this evening. While in accord with the writer, in most things, there are some from which I must differ.

I was greatly surprised while listening to Dr. Marshall's remarks to hear him speak of having such severe trouble arising from opening pulpless teeth. I have never had such an experience. I do not see how one can well have them. In a practice of over ten years, I have never had trouble from opening a pulpless tooth, save in one instance, and in that instance only I used a solution of corrosive sublimate—ordinarily not using anything. And in regard to his conclusions as to the cause of the trouble which he had, I would question them because I have many times opened abscessed teeth, giving vent to the purulent secretion, leaving them open to the air, and with no trouble following. In such a case, why should there not be trouble from the opening if that was the cause of the trouble in the instance spoken of ?

The author in his paper speaks of cleanliness being next to godliness. Mr. President, I would go still farther, and say that as for dentistry, cleanliness *is* godliness. Give me the opportunity to clean and dry the pulp chamber and root canals, and I care not especially about the microörganisms.

I do not want to be misunderstood. When I said cleanliness, I do not necessarily mean modern surgical cleanliness. I mean simple cleanliness in its ordinary sense. I know when I say this, I am opening myself to the attacks of the so-called modern dentist who believes that the god of dentistry is treatment ! treatment ! ! treatment ! ! ! I would go farther and say that I firmly believe that he who as a practice, treats at length or frequently, pulpless teeth, is paying a premium on uncleanliness. In other words, allow me to illustrate. A patient sits in your chair with a pulpless tooth. You attempt to clean the root canals. You believe in treating. You say to yourself, Well, that I think is clean enough. I think it will do. I will put in a treatment and see whether it will do. Do you not see that by so doing you are not adopting the plan that should govern all dentists ; that is, *in every-*

thing you do, do your very BEST. Now take the other hand. A patient sits in your chair with a pulpless tooth. You determine to treat and fill at the same sitting. You necessarily must be very positive that you have it clean before you fill; realizing that if you have not made it clean and put it in proper shape to fill, it will cause the patient trouble, and you trouble. So you see the immediate filler is placed more on his honor than the man who treats, giving the latter the opportunity for slovenly and imperfect work.

I have no axe to grind with those of my friends who believe that microörganisms are the cause of all these difficulties. If they believe that, they are acting consistently. I cannot believe this explanation is the correct one, only possibly, in exceptional cases.

Many of our most successful operators in the past and at present, also, do not practice the so-called antiseptic surgery. Among others that I might mention, is Mr. Tate, one of the most successful ovariotomists in the world, who at least until recently, used, as he says, nothing but hydrant water for cleansing and purifying purposes. I know few will admit a similar belief but there are many who believe as I do—that these explanations are not satisfactory—but who do not have the courage of their convictions.

Gentlemen, what we must do more in the future, if we expect to occupy the place which we hope to in the world, is to think for ourselves. How few there are of us who, when a patient sits in our chair, observe anything but the work before us. How much we could learn by noticing the teeth, the gums, the tongue, and in fact, all the organs of the oral cavity. How necessary it is that we be not blind leaders of the blind. This matter has been brought more closely to my attention by an article in the *Dental Cosmos* a few months ago by Dr. Kirk. The profession generally have been taught in the past by a would-be celebrity that carbolic acid should never be used in a pulpless tooth, because it coagulates the albumen, thus preventing its action only on the surface and cutting it off from any action upon the rest of the tooth. All it needs is a careful perusal of Dr. Kirk's article, illustrated by his many able experiments, to show that this so-called scientific authority upon carbolic acid knew nothing of what he was talking, and the strong probabilities are that very few of the experiments which he speaks of in his papers, are ever experiments in reality—only simply dreams.

The author, in speaking of Dr. Craven's paper read before the

Illinois State Society, took exceptions to his conclusions. If I understand correctly the conclusions given by the author of the paper, I should be forced to accept all save the first, provided I can get the root canal in a proper condition to fill; that is, cleaned out and perfectly dry.

I presume that the reason my friends who believe in the so-called microörganism theories, have so much trouble with the microörganisms, is that in their offices their microörganisms are not congenial to each other, and quarrel at every opportunity. I have found in my office that many times my patients have had previous experience with those who are followers of the prevailing "fad" and had constant trouble—when by getting the parts clean and dry—and immediately filling, the trouble has ended, for the simple reason that I placed the parts in a soothed condition allowing nature to have a chance (and that is what she needs) with uniformly favorable results.

Allow me in conclusion to say that I firmly believe that we do not as yet *know* as much as we *profess* to know, and while microorganisms may be the cause of all the ills of humanity, I firmly believe that with our present knowledge many that are now classed as caused by microörganisms, may yet be shown to be a mistake, and that the microörganisms are acting as nature's scavengers, trying to relieve nature from the impending trouble.

Dr. VIDA A. LATHAM: The essayist having taken up so many subjects, it is almost impossible to do more than discuss the questions in a very incomplete manner. With regard to the bacterial theory in dentistry it seems almost out of order to even mention the question, Prof. W. B. Miller, of Berlin, having so ably shown the now accepted fact of the microbic theory and its relation to the chemical theory which play so important a factor in caries of the teeth. To explain the theory it is only necessary to consider the question of cleanliness. What is cleanliness? We know it is divided into two forms—ordinary and special. In medicine, of which dentistry is a subdivision, we use the antiseptic or surgical cleanliness, which involves considerable care to obtain and maintain for that matter. As an example, let any one use ordinary cleanliness with his hands then take up a thoroughly dry air sterilized cover-glass and hold it for a moment by the edges with the fingers, and then place it on a pure sterilized gelatine plate culture and see if in a very little while he does not have a number of different colonies growing. It is only when we obtain surgical cleanliness do we avoid such contamination as a general rule and are free from pus formation in our dental and surgical work. In these days to have pus in a primary wound is a sign of gross negligence in most cases and one which is a disgrace. Understand, bacteria are only one of the many theories of the cause of disease, and we must not forget the many forms, as chemical, traumatic, electrical and thermal, and give them their due consideration. The value of the study of fermentation in medicine as caused by microörganisms is well seen in urea fermentation. Formerly, when instruments were introduced into the bladder, it containing a urea solution, no one understood why it was so often followed by regular fermentation, which frequently led to the death of the patient. Since the day of careful sterilization, ammoniacal fermentation is now a matter of very infrequent occurrence, and usually due to carelessness on the part of the patient or surgeon. So marked, indeed, has this been that even those who sneer at bacteriology and antiseptics have been compelled to adopt new methods of procedure in regard to cleansing their instruments, a cleansing which means the removal of these minute vegetable protoplasmic organisms, which when introduced into a suitable fermenting medium give rise to the alkaline, fermentive, putrefactive, and other processes. We all know how glucose under the action of the lactic acid ferment is converted into lactic acid, and that under the butyric ferment, a small microorganism is converted into butyric acid, carbon dioxide and hydrogen. Besides, we have others which produce pigment and pathogenic bacteria, most of them possessing a peptonizing action and a few others also secrete a true diastatic ferment. The presence of bacteria producing death by septicæmia or pyæmia from extraction or lancing the gums in patients with imperfectly cleansed mouths is too well known to require discussion. Also how saliva when entering the mouth is pure but how soon it acquires toxic properties so as to cause death when inoculated into animals, or even accidently into people.

Dr. Eugene S. Talbot: There are hobbies and hobbies. The success of the hobby depends upon the man who rides it. The motive and sound judgment must be taken into consideration. Thus Marshall Webb's (grand, noble fellow) hobby was contour gold fillings, his sole ambition being to restore decayed teeth with gold to their natural contour. To such an extent did he carry this hobby that at a meeting in Milwaukee, Wis., at which I was present, he restored a full gold crown on the roots of a right inferior third molar which took one and one-half hours to adjust the rubber dam, and from 10:30 A. M. to 7:30 P. M. to restore the crown. He was conscientious in his efforts, giving his life to prove a useless theory. There are a large number of men including Younger, of San Francisco, and Cravens, of Indianapolis (whose little work upon Pyorrhœa Alveolaris he so kindly sent me), who believe that they can cure "pyorrhœa alveolaris" as suggested by Dr. Riggs, by simply removing the deposit from around the necks and roots of the teeth and the application of local remedies. I believe these men are honest in their work and that they can by constant removal of tartar prevent the progress of "pyorrhœa," but how such intelligent men, with their large experience, can believe that they can cure a disease without removing the cause, I do not understand. One could just as well try to empty a barrel which is constantly being filled with water by bailing it out with a dipper, as to try to stop the accumulation of tartar which is being deposited from the blood. These men are reasoning from a false hypothesis and sometime before death they will realize that they have labored in vain. I know of others who have from selfish motives ridden hobbies that were based upon false conceptions, who in the end have looked back upon a misspent life. With the ambition, push, and energy which they possessed they could have accomplished much that would have advanced the profession and benefited mankind. There are, however, men like Miller, of Berlin, who from sound reasoning have studied the particular hobby which they propose to ride, giving due credit to those who have added their mite to the subject, and therefore, with no other motive than to benefit their profession, have spent their time and money and frequently health in building up sound doctrine which will endure as long as time lasts. Hobbies are good things and no improvement in any direction can be accomplished without long, persistent, hard work, which must in the end become a hobby of the individual.

Dr. C. N. Johnson: Mr. President, I have really very little to say, for much that I would say has already been said by others. The discussion seems to have drifted for the most part into a consideration of the germ theory of disease. I wish to go on record as a firm believer in that theory. I base my belief, not—I am sorry to say—on original investigation, but upon the results I see in practice. I can remember the time—though I am not very old —when it was considered a long, tedious process to cure an ordinary alveolar abscess ; now we usually cure them in short order. A pulpless tooth was a bugbear to the dentist when I began to study dentistry, but now they are brought under control in most cases without difficulty. All suppurative affections yield more readily to our present treatment than they did to the past, and we are able to accomplish results that we did not dream of in bygone days. . This may be no argument in favor of the germ theory, but the suggestive thing in connection with it lies in the fact that just about the time we began to recognize the germ theory and to base our treatment on that hypothesis, just at that time did we begin to accomplish better results. We do not know all about the germ theory yet—in fact we know but very little—but in the light of past experience, I am impelled to the belief that microörganisms are an important factor in disease, and that the clearer we recognize this idea and base our treatment on this deduction the greater will be our success in practice.

Dr. ARTHUR B. FREEMAN : The discussion of the paper puts me in a happy frame of mind, especially because you have not all agreed with me. I was worried by the executive committee for a whole year before I consented to write on this subject and when I finally did give my promise, it was with the assurance that I would worry some of you on the pet hobbies of the day.

That the discussion has been so spirited proves the fulfillment of my expectations.

Dr. Palmer in opening the discussion attacked my definition which was borrowed from the Encyclopædic Dictionary, and partially from other sources.

Perhaps I did not make my distinction quite plain between a hobby and a fad, but I intended to convey the idea that hobbies were original pet methods, theories or pursuits with some one, while those weak, useless, degenerate ones may more appropriately be termed fads.

Several speakers have criticised the allusions made to what they call worn-out subjects, long ago relegated to the list of settled questions ; and also find fault that the profession takes decidedly more interest in the practical subjects presented than in those papers purely scientific, or theoretical I should say. There is nothing new under the sun, and in revolving cycles we must expect to see again and again customs of a former age, returned to remind us of the limitation of human invention and the fickleness of mortal fancy.

That this discussion has centered about the germ theory is very good evidence that we have not lost our interest in those subjects which are largely theoretical, and yet until the routine of existence ceases—eating, drinking and sleeping—it is not at all likely that the rank and file of our profession will to any large extent lose their interest in things wholly practical.

I was well aware of one or two inaccuracies when I read the paper and I let them stand as vulnerable points for attack.

Dr. Marshall takes exception to the statement made that there are not microörganisms in circulation in the blood in ordinary physiological conditions, and advances the illustration of the bacilli in the blood of patients suffering from rabies, which have been put under culture and on injection into the lower animals have produced the same condition.

In this connection, Dr. Latham, whom I understand is a microscopist, has unwittingly stated just the argument I wanted. She tells us that under the most aseptic conditions it is impossible to pass a glass of water from the hands of one trained nurse to the hands of another without contamination. If this be true it is just possible that some experiments performed to prove these pet hobbies are of little value.

In these later days medical expert testimony can prove a sane man insane or *vice versa*, and when a scientist sets out to prove a pet theory some of his deductions may be incorrect.

I cannot agree with Dr. Marshall's experience in regard to the treatment of acute pericementitis in sound teeth where the pulp has spontaneously died. However I rarely open into such teeth unless the patient gives a history of trouble, or unless they are much discolored.

In all cases of acute trouble from this cause I make a free vent and after removing debris I leave them open until soreness has subsided, with perhaps a little local treatment.

After two or six days I introduce a loose cotton dressing, changing it frequently and each time packing tighter until an hermetical filling can be tolerated. I rarely treat such conditions to exceed two weeks.

Several speakers have raised the question, What is cleanliness? They claim, as I understand, that there can be no cleanliness except it be modern surgical cleanliness, or that attained by the use of disinfectants and germicides. It is a well-known fact that prior to the days of Listerism those surgeons who had plenty of pure water in dressing wounds had better success than those who were careless in their dressing.

In one of the wards of an army hospital which was given up exclusively to the treatment of gunshot wounds were two surgeons. One practiced exclusively on one side of the ward and the other on the opposite side. The general conditions on the two sides of the ward were equally good. One surgeon was the personification of all that was tidy in personal appearance, and cleanly to a nicety in all his habits. In his surgical work he carried this personal characteristic to an extreme. The wounds under his treatment were carefully and regularly washed and as neatly dressed. His percentage of deaths was about twenty per cent.

On the opposite side of the ward his professional brother who was a man of careless habits and who did not always give his personal attention to details lost fifty per cent of the patients under his treatment. This was before the days of Listerism. If this well-authenticated fact is not an argument in favor of ordinary cleanliness I do not know what to call it.

Dr. Crissman criticises me for not universally using the rubber dam because it is such a time saver. I often save time by not using the dam. Having all dressings in readiness and the proper instruments at hand I can change an application or dressing under dry conditions with a napkin while he would be applying the dam and the patient would be very grateful that I did not use the rubber. Without doubt I apply the dam in fifty per cent of cases but not, however, because I want to fence out bacilli. Much has been said by various speakers which was not pertinent to the paper, to which I will not allude.

CHICAGO DENTAL SOCIETY.

Regular meeting, May 2, 1894. The President, Dr. J. H. Woolley, in the chair.

Dr. R. B. Tuller read a paper entitled, "The Preparation and Shaping of Roots, with Reference to Banding and Crowning."

DISCUSSION.

Dr. F. K. REAM: Mr. President and Gentlemen: I have not had the pleasure of reading Dr. Tuller's paper, and I have some doubt as to whether my notes will correspond with what he has said, since he says his paper was written since dinner time.

Relative to the instruments for the preparation of teeth, Dr. Tuller mentioned nothing, and in no department of dentistry are the needs greater than in this. If the gentleman is here who finds no difficulty in filling tortuous canals, and has no abscesses on the buccal roots of molars, he may have the instruments that will prove a panacea. In the *International Dental Journal*, for February, there is mention made of a thin corundum disc being mounted and held in the engine over a spirit lamp. While warm the edges are pressed outward, forming a cup-shaped disc, which when hard and thus used is of great assistance in preparing these difficult places on the anterior surfaces of lower molars.

Much harm is done in crowning by the accidental grinding of an adjoining tooth, the approximating surfaces being destroyed, predisposing them to decay. There is frequently extensive laceration of the gum tissue. Dr. Tuller told me the other evening about what he would embody in his paper, and I understood that he would allude to this. I have investigated some points along this line. He told me he would mention something in regard to instruments for the preparation of teeth and also of aluminum discs with corundum powder which he used and found extremely satisfactory. Therefore I have taken up this point. I speak of the lacerated condition of gums from the grinding of teeth. They are very bad in a great many cases, and he speaks of overcoming this difficulty by the use of a thin disc with corundum powder. I am not familiar with that method. Dr. Brophy's matrices have been of excellent service to me in cases where fillings have been exposed in the preparation of teeth and roots. In some cases the matrix was applied so as to prevent any grinding or destruction surrounding the filling, protecting it very nicely.

Dr. Kirk, in the *Cosmos* for October, and Dr. Dennis, in the December number of the DENTAL REVIEW, present methods the details of which have been given by Dr. Tuller.

The *Western Dental Journal* gives this method, the root being prepared in the usual way: If a Logan crown is to be used, rolled gold or thin platinum is placed around the post and introduced into the root with sufficient cement to hold the covering in the tooth. After it is hard the crown is removed, leaving the platinum there, and then that is filled up flush with soft copper amalgam, built up as full as is desired. It can then be polished as needed and the crown reset with cement, only a small quantity being necessary.

I wish to speak now of the preparation of lower molars decayed at the bifurcation. We want many times to crown them. All of us are familiar with the evil effects in that class of teeth if they are crowned. I simply make the suggestion that many times these teeth may be crowned, leaving them separate as bicuspid crowns or joining them at the masticating surface, as cleanliness might call for.

As to the excision of live teeth by the use of excising forceps, the time allotted me for this discussion would not permit me to dwell upon at length. I will simply say that granting a few exceptions where crowns are to be used, excising forceps have no place in my office. I believe but a small proportion of live teeth after preparation are satisfactory to the operator, and frequently on account of the pain to the patient he is induced to stop short of perfect preparation. I hope the essayist and the gentlemen who are to follow me in the discussion will tell us how to prepare for lower bridges where the posterior teeth have tipped forward and the anterior backward. The method given in the *International Dental Journal* I will repeat in the discussion further on, if necessary.

As the materials for setting crowns and banding roots are so closely related, I will call attention to two points. One is copper cement mentioned by Dr. Ames. He told me that this had to be discarded on account of its caustic effects. The other one is the copper lined bands for crowns. I would like to learn something in regard to these points.

[At the close of Dr. Ream's remarks, Dr. Tuller said the paper he had written had been mislaid, and that the one he had read was hastily prepared and perhaps did not cover all the points that he intended.]

Dr. C. S. Case: I am very sorry Dr. Tuller did not bring all of his paper here to-night. If he had, he doubtless would have brought out many points in connection with this subject that would have been very interesting, judging from the paper which he has presented. I wondered when I read the title of Dr. Tuller's paper what could be said new in regard to the preparation of roots for crowns, and I concluded that probably nothing could be said new, because almost everything has been said and written relative to the preparation of crowns somewhere by some one. Still the reinforcement of the old methods, if they are good, is always a great advantage; especially in an operation which lacks, as crown work does, perfection in the majority of operations. It is not because crowns cannot be made artistically and mechanically correct; it is not because they will not remain permanently upon the teeth; but it is because the operation is not what it should be at the border where the band joins the root. There, it seems to me, is where our whole efforts should be centered. If we insert a gold filling which extends beneath the free margin of the gums, and especially so if it laps upon the outside of the root, we spend a great deal of time in the finish of such fillings, never satisfied until all of that portion of the gold which forms a joint at the root is perfect. Why? Simply because we are aware that a slightly overlapping edge of a gold filling at that point usually results in failure.

But how is it in regard to the fitting of a band for a crown? Here it necessarily must lie upon the outside of the root, and with all our care, with every effort we can make in regard to the finish of that band and the joint between the band and root, we cannot get it as perfect as we can a gold filling. In the first place, the root should be formed properly to receive the band and form as perfect a joint as possible. I believe if the band is made the proper size for the fitting of the root and the sides of the root are parallel, the joint at the free border of the band will be sufficiently close to permit a good finish, provided the band is made of the proper material and of the proper thickness. I think the principal object in the choice of material for a band should be with a view to the perfection of the joint. I believe that pure gold, or No. 22 caret gold, not coin, will be the final material for the banding of teeth for crowns, because it permits the shaping and burnishing of the band to fit the inequalities of the root. It is not possible always to shape a root so that it is perfectly even around its peripheral surface. There are depressions on the sides of bicuspids and other roots that it is impossible for us to entirely remove, and if the band fits tightly over the root, certainly there must be a V-shaped opening at this point which will need to be burnished in against the root.

Much depends on the instruments that are used for removing the enamel and shaping the roots. I think that no more of the peridental membrane should be removed than is positively necessary because at that point (illustrating) the continuation of the mucous membrane of the gum loops back something like a curtain and joins and unites with the peridental membrane in nourishing the root. After the enamel is all removed it usually leaves the sides of the root parallel; though there are instances where it is necessary to remove some portion of the dentine in order to perfectly shape the root. Some instrument should be used that will extend under the free margin of the gums and cleave off the enamel without lacerating any greater portion of the tissues than is positively necessary, and the sides should be made parallel or somewhat cone-shaped. The object of making the sides cone-shaped, and why it is so popular, is with the idea of "driving" the band on the root tightly, and in that way securing a perfect joint at the upper border of the band. I believe we have more failures in that particular than there would be if the sides were perfectly parallel and we had a band the proper size to fit on. Then you get a long parallel bearing on the sides of the root. Oftentimes if it is driven on to a flaring portion, you at once carry the upper border of the band out rather than hold it in against the root. But the principal objection is where these little depressions occur on the sides of the root, though the band may fit so as to seem to be close and firm. If the material is thin enough and soft enough we should be able to fit and finish that band as carefully as we would a gold filling at that point.

Here is where the principal care and skill in crowning teeth will be centered. When you look at teeth and see the gums inflamed between them, you know that some irritating agent beneath the border of the gum is producing it. If you look at the border of a filling that extends beneath the gum margin and see the gum inflamed, you know that the gold has not been finished along the cervical border. This is a common condition with a large proportion of crowns. The gums are inflamed around the crowns simply because of the irritation of the border of the band. In those cases where there are spaces for the collection of food and the decomposition of secretions there will be considerable inflammation. It is not only necessary to have a perfect joint, but the edge of the gold should be smooth and thin. That is one of the things where there is not enough care taken. I believe in making a band of No. 28 gauge gold, then filing it so that it is thin at the edge, not leaving it rough, but smooth the edge perfectly ; then if the band is put on a root with parallel sides it should come close to the root at the upper border. With your burnisher, if the material is sufficiently soft, you can press it into all the inequalities of the root.

Pay half as much attention, if you please, to finishing at that point as you would when you are finishing a gold filling that extends beneath the margin of the gum. That is not being done simply because they say a band cannot be safely burnished. You cannot push on the sides of the band. Why not? Because your bands are made of such thick and stiff material that they will not bend. If you push on the sides of them you are liable to push the crown out of its position.

Another thing. The post that extends into the canal is an important factor in the crowning of teeth. I believe that the post should be of very rigid material and should fit the canal. If the post fits the canal perfectly and is made of rigid material, it prevents the lateral movement of the crown.

A word in regard to the crowning of teeth without bands. I believe all the enamel should be allowed to remain on the tooth that is possible in inserting any of the crowns that are used without bands, and that, with the exception of the anterior portion, the crown should not extend beneath the margin of the gum. Care should be taken to leave all the enamel that is possible on the sides. If the joint between the crown and the root is free from the margin of the gum it can be cleansed perfectly, and you can see you have a perfect joint.

In regard to fitting crowns over live pulps, it is often claimed that if this is attempted the pulps will soon die. They no doubt will if the crowns are fitted in the ordinary way, that is, if the margin of the crown extends beneath the free margin of the gum. Remove as little of the enamel as possible so as to carry it down just above the bulge of the enamel, and at that point you can burnish the gold in against the crown so as to make a perfect joint and I believe the pulps will not die under these circumstances, because I have crowns on teeth for regulating purposes that have been on live teeth for at least two years and there has been no indication of death of the teeth. Some of them have been removed by me and the teeth are in perfect condition.

Dr. J. AUSTIN DUNN: We very seldom have to take off a crown of any kind, but speaking of shell crowns I will give the society my method of taking them off.

I think most of us are in the habit of commencing at the cervical line and opening it up. My plan is to cut in just over the stump of the root, make an oblong hole, and then with a narrow chisel wedged between the inside of the crown and the tooth stump, you will be surprised how easily it will move off.

Dr. TRUMAN W. BROPHY: I hardly feel like discussing the paper for I was absent when it was read. I always like to hear papers on practical matters. One of the first considerations in the crowning of a tooth is to find out whether it is suitable to be crowned, whether it is in a proper condition of health to receive the crown. Many mistakes in my opinion are made by attempting to crown roots which would better be removed. When I make that statement I do not want to be understood as in any way discouraging the crowning of roots that can be made firm. I have had a number of cases come under my observation a very short time after the crowns were adjusted that were absolute failures. The work in the construction of the crowns was good and they were well adjusted, but the judgment of the operator was defective in trying to restore to usefulness a tooth that never could be made useful. When a root loses its support, when the pericementum has become diseased, or when the alveolar process that supports it has been absorbed from any cause and does not give it suitable support for the bearing of the crown, such a root had better be removed in my judgment. If the root is firm or can by any means be made firm, then of course it may be capped with some promise of success. Sometimes we have roots the pericementum of which is inflamed; and then again, we have cases of abscesses of roots, both of which may be successfully treated and the roots put in a condition of health. The principal consideration is to get the roots just right, then the crowns such as have been described may be adjusted. I question the propriety of adjusting bands to roots that are broken off near to the alveolar process. In such cases a Logan crown or something approaching it is a great deal better. The band applied in close proximity to the alveolar process is a source of irritation.

Gold crowns with porcelain faces fill a very important place in our profession, because we can do so much in the restoration of the denture that a few years ago would have been regarded as impossible. Porcelain crowns adjusted with platinum bands have been used a great deal of late—at least I have seen quite a number of them, yet I have not made them. Those I have seen seem to approach more nearly the general appearance of the natural teeth than anything else I have seen. If the platinum band is carefully adjusted to the root, fitted as perfectly as possible, and then the crown attached by baking it in a little furnace, we can flow the new porcelain of the attached tooth to the platinum over the band in such a way as to cover it. In cases where the pulps are yet alive, by that procedure we can get a good result, whereas in certain cases of anterior teeth we put on a band with view of preserving the pulp, and if we do not resort to this method of covering it by means of porcelain it makes a rather unsightly crown. In my judgment it is better to devitalize the pulp in such cases than to take the chances of putting a crown on and having the pulp die under the crown. If the pulp dies it will render the procedure of crowning a failure. For this reason and for the reason that we have to do it over again, I think it is better to devitalize the pulp in such cases. But of all things I wish to emphasize, it is the necessity of having roots in a healthy condition before crowns are adjusted, then we may reasonably hope to render valuable service to our patients.

Dr. Louis Ottofy: For the purpose of trimming the enamel at the cervical border, of which Dr. Case has spoken, I will say that he is the inventor of enamel cleavers that I think are for that purpose the most suitable of any on the market. The doctor is too modest to mention it himself.

In attaching a bandless crown, I see little necessity for cutting the anterior surface down under the margin of the gum. That kind of a tooth can hardly be fitted with absolute perfection to the root, no matter how carefully it is done, and if the tooth on the anterior surface is shaped to come to the margin of the gum, it is sufficient. There is no necessity of cutting it down beyond it. If the joint under the gum is not perfect the roughness will inflame the gums and the more injury takes place the more the gums will recede, until eventually the root is exposed to carious action. If the anterior surface of a Logan crown is fitted as perfectly as possible to the line of the gum, after the cement has set you may take a cup-shaped rubber polisher and pumice, and with this the margin between the root and the crown can be polished smooth.

The attachment of half crowns to teeth where the pulp is alive, it seems to me, is seldom necessary. If a tooth is not decayed badly, it is preferable to fill it. If it is beyond filling, the probabilities are that an entire crown would be more serviceable.

I agree with Dr. Case in regard to No. 22 gold, and even prefer pure gold for a band; I see no advantage in using a wide band driven down on the root; there is but little strength gained from a band. The purpose, in my opinion, is more to make a good joint between the root and the crown.

Dr. DON. M. GALLIE was the next speaker to discuss Dr. Tuller's paper, his remarks being accompanied by demonstrations on the board.

Dr. CASE: I want to pay a tribute to Dr. Gallie's instruments. I have been exceedingly pleased with them, and I am surprised that more practitioners do not use them. They combine a large proportion of the needs that are demanded in the removal of the enamel. If there is a large portion of enamel to be removed, you will use a good deal of force in removing it with the usual instruments, and with a liability of having the instruments slip and injure the patient. With the forceps which Dr. Gallie has invented you can get all the force that you need to remove the enamel. It seems to me every man who crowns teeth ought to have those forceps because they will certainly reach that particular kind of enamel that is so difficult to remove.

Dr. Ottofy was kind enough to mention my enamel scalers. The principal thing in an instrument for the removing of enamel is intense hardness. This I have endeavored to combine with sufficient strength and convenient form.

Dr. GARRETT NEWKIRK: I have used Dr. Case's cleavers with a good deal of satisfaction. I should not like to get along without them. Have had no experience with Dr. Gallie's.

As to protecting the gums, we do not, I think, use cocaine as we should. If we will place a long, thick piece of spunk between the lip and gum above the point to be operated on, and having the patient keep his mouth steadily open for a few moments the gum may be dried and a cocaine solution applied over it, also between it and the root by means of a thin instrument wrapped with a few shreds of cotton. In a few moments insensibility will ensue. In trimming I often use the same form of instrument for crowding back the gum, which I employ for filling cervical cavities, instead of the cervical clamp, viz., a rather thin blade notched to fit the root. The handle is held sometimes by my own left hand, otherwise by my assistant.

The trimming may be done sometimes with a small cup-shaped corundum wheel, often with a fissure bur, but more frequently our chief reliance must be upon the shoulder chisel or cleavers like Dr. Case's. All these methods require first, perfect quiet of the patient's head; second, a careful, steady hand on the part of the operator.

[Dr. Newkirk then discussed the adjustment of crowns to the roots of bicuspids and other teeth by illustrating his remarks on the board.]

Dr. J. G. Reid: I will just call attention to a little instrument I have seen for trimming the root of a tooth. I will not attempt to draw it upon the board. It is the invention of Dr. Taggart, and I am sorry he is not here to explain it himself. Some of you may have seen it, while others may not. It is certainly an instrument that every practitioner should have in his case. It is simply a small fissure bur centered with a copper disc, and it is soldered to any length that you wish from the point of the bur, or any length that you wish to fit the band to the tooth. You can have any number of lengths to accommodate any depth you wish to cut. This is soft soldered to the shank of the bur, then it is trimmed down to a very small circumference, so that a little wheel simply rests on the end of the root. It is more desirable probably in the central incisors than it would be in bicuspids and molars, but it does the work all right and it does not injure the soft tissues. It is very small and passes under the margin of the gum. It can be utilized many times when nothing else will do the work. I have not seen it in anybody's office but Dr. Taggart's. I have asked him how he solders it without drawing the temper of the instrument, and he says this is a delicate thing to do, although it is easy enough if you know how to do it. Many of you would think you could not do it. The disc in the first place is made large, perhaps one-quarter of an inch, or maybe an inch in diameter. He then puts solder on the edge of the disc and holds it in the flame of a lamp, and it is sufficiently hot to solder itself to the bur without drawing the temper in the bur. You cannot do this and make a small size without drawing the temper and injuring the instrument, but by having a large disc and holding it in the flame it is sufficient to flow the solder well, and then it is trimmed down in the engine to the center and you can have any depth you want.

Dr. J. E. Hinkins: I was just remarking to Dr. Brophy here that in fitting bands I use campho-phenique with cocaine on the gum as an anæsthetic. Take a piece of cotton, immerse it in a few crystals of that, and apply it around the gum before preparing the root and it gives good results. I would like to ask Dr. Case what he calls his instrument?

Dr. Case: I believe they are called cleavers.

Dr. Hinkins: I call them scalers. In crown work I have a notion that in putting on a band, driving it on is not the proper way. I was in the office of a dentist not long ago and the assistant came out and I said: "What is the doctor doing?" The reply was that he was fitting on a band. He was hammering as if working on a piece of steel. I believe that such force is unnecessary. It injures the peridental membrane, and at the same time I do not see how a dentist can get a good adaptation of the band. I fit them as Dr. Brophy describes, only I make my band just a little bit large, and then take my crimping pliers and the part of the band that goes up under I crimp the least bit. In this way the band will adapt itself to place. I prepare the borders of the root very carefully. I have three or four of the instruments spoken of by the doctor, and they will do well in some cases; while in other instances I use Dr. Case's scalers. In some instances I have used Dr. Talbot's tartar scaler; and I have also used corundum and aluminum discs; whichever my judgment dictated.

Dr. J. N. Crouse: I do not want to take up too much time of the society, but I was going to describe how best to put on a bridge to a tooth where the molar tips forward and the bicuspid backward. I am indebted for the idea, or at least for the perfection of the idea, to Dr. C. M. Richmond, of New York. I shall describe the operation as if I was doing it myself. I should crown these two teeth as if I was not going to put on a bridge, and then make a bridge to telescope these crowns. You shape the caps to fit over the crowns in proportion to the amount of strength you want, and you are governed somewhat by the occlusion of the upper teeth. It is unnecessary to make full rings around them. You can leave nearly the entire back half of the cap off; just leave a fringe, as it were, or a lug, on the back part and have the rest fit around. It makes a good bridge and you can take it off whenever you please. You can cement your cap on, then fit your bridge over that. It is a removable bridge. By carrying that system still further, in my opinion it will be the system of bridging in vogue during the next ten years. It requires nice, careful, mechanical work, but not more so, perhaps, than by the other method. It is easier to put on and take off.

Dr. W. B. AMES: It seems the ground has been so thoroughly covered that very little can be offered. I wish, however, to particularly mention a form of bur of which I make use to a considerable extent in preparing roots. It is the flame shaped cavity bur. You are all familiar with the finishing bur of this shape. I had made some time since burs of this shape, cut as cavity burs are cut, and have found them to answer an excellent purpose in the shaping of proximate surfaces where it is difficult to get with a disc or such an instrument as Dr. Gallie describes, in which I want to say I am very much interested.

There is nothing I have ever found with which I can get in between and pare down the proximate surfaces as well as with this cavity bur. It suits me better than the bur described by Dr. Reid because in the fissure bur you have straight sides and nearly square end, whereas the flame shaped bur has the taper which you usually wish to give to the root. I do not think that there is any advantage in having a disc upon the bur, as if it is held steadily it can be used to the depth desired and a disc seems to me a decided objection.

Dr. R. B. TULLER: I have not much to say in closing this subject. I am sorry if I have disappointed anybody in regard to the paper. I felt that I disappointed Dr. Ream a little because he had come prepared to discuss the subject with considerable reference to the use of additional porcelain. As I have previously said, I had a paper written, touching more extensively upon this point than I have here, but lost track of the manuscript in some way, and rather than fail in appearance here wrote hurriedly this afternoon what you have listened to.

There were a good many points that I did not touch upon in this paper that I did in the other, among others the means used in shaping roots. The aluminum disc has been mentioned. I have used it, and intended to speak of it. When it is of the proper shape it surpasses anything I have ever found. It creates less pain in cutting where it touches the soft tissues. It cuts more like a sharp knife blade. The patient does not flinch much and it does not lacerate the tissues as much as corundum or carborundum disc or wheels.

Speaking of excising teeth, I have used these aluminum discs for that purpose, but I do not know whether they are on the market now or not. Dr. Call used to make them. With an aluminum disc you can cut down almost through a tooth in a very short time. You can cut a porcelain crown in two with an aluminum disc, properly charged with grit in a surprisingly short space of time.

I think much damage has been done where excising forceps have been used, sometimes simply making a slight groove on the labial surface and then clipping off. Such cutting away of the strong portion of the tooth produces shock that is something terrible, so that unless the root is banded afterward it is sure to split; and it certainly produces a shock to the system and sometimes to the peridental membrane that takes days to recover from.

Dr. Brophy spoke of putting on crowns where the roots at first sight appeared beyond redemption. While it is by no means new, I think it is a matter worthy of more attention than it has heretofore received at the hands of the profession because it certainly saves these roots in many cases for four or five years and perhaps longer. In one instance I put a Logan crown on a cuspid root, funnel-shaped, decayed to a feather edge almost and filled it with copper amalgam, retained a place for my dowel pin and brought the amalgam to the surface, so that none of the root was exposed. I filled around the pin of a Logan crown with amalgam, then I pressed it up into place so as to finally form a complete union with the amalgam over the root. It was a left superior cuspid. I told my patient at the time the work was done that it was only a temporary operation, that it might last one or two years, but I hardly thought it would. I saw her after it had been in position for four years and found the mechanical work perfect.

As I said, I have had a good many patients that would not endure the pain of having the root trimmed to put on a band, and consequently when I must use a band I have used an anæsthetic to some extent. I have used it not only by holding the anæsthetic in position with spunk or cotton, but with a little thin stick working in under the free margin of the gum, as in treating pyorrhœa, and in that way suceeeding very nicely in benumbing the part so that I could work quite well without giving pain.

I agree with Dr. Ottofy about bands. I do not think they cut much of a figure if the crowns are made as they ought to be. Of course when properly fitted some additional strength is given, and in some cases we could hardly do without them.

THE DENTAL REVIEW.

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A WORD TO DENTAL STUDENTS.

Now that the college openings are close at hand a word to the prospective student is perhaps timely. We would impress upon him that he is not entering upon a period of boyish frolic and entertainment, but upon the sober work of manhood, in obtaining an education in one of the learned professions.

There are still those so ill-informed as to suppose that "any one" may easily become a dentist, that dentistry is merely a mechanical pursuit requiring but little general education, no special mental activity, or great physical endurance, for its successful following. Never was greater mistake! And any young man taking up the study, so thinking, will not have gone far in his work before greatly modifying his opinion. No profession requires a more thorough all-around equipment, in order to reach a high plane, than does dentistry.

Too many knock at the doors of dental colleges who would more wisely first seek further instruction in the common schools, and too often, it is feared, they are admitted. Such are heavily handicapped throughout the entire course. It is not enough that they have mechanical aptitude, though that is essential. The basal principles of dentistry are founded on anatomy, chemistry, physiology and materia medica, the same as in medicine, and it is just as necessary for the dental student to have sufficient education for the proper understanding of these branches, as it is for the medical student. Therefore, if the would-be student suspects that he is lacking in this respect, he would better take more time for preparation, as in the end he will be the gainer.

Again, as to mechanical ability. The would-be dentist must know that he has it—the more the better—that he may execute well with his hands the conceptions of his mind. The writer once heard a man, a dentist of good education and a fine thinker, exclaim, "If I could only execute the conceptions of my brain!" This man towered above those about him in mental ability, but the results of his mechanical operations were, comparatively speaking, those of a child.

Now, having satisfied himself that he is qualified to enter upon the study of dentistry, the student should select the school which he believes offers the best curriculum—never fearing hard work—the school from which he will be proud in after years to hold a diploma. Then enter early, hear the first lecture, the last lecture and all the lectures between, and never miss a clinic. He should read up before each lecture all he can find on the subject under discussion. In this reading he may often find opinions differing from those taught in the lecture room, but he will do well to take it for granted that his teacher is giving him the best on the subject and respect his opinion; remembering also, that it will be on his teaching that the examinations will be based.

Again, having chosen his school he should be loyal to it. If he have a grievance he should not take it to outsiders, which course usually ends in his own humiliation, but should place it before the proper authorities in his own school, with the assurance that there is every probability of fair treatment.

In conclusion I would say to the dental student, Aim high. Have a purpose to know all about your chosen profession that can reasonably be known by one man, and let this desire for knowledge extend in other directions. Be alert, be thoughtful, thus, all the observations and experience of your life will add to your culture. As the years go and the great mass of people become better educated, more dentists of liberal education, refinement, and broad ideas will be demanded. Let it be your ambition to be among them. T. L. G.

DR. WEEKS' ARTICLES.

The conclusion of Dr. Weeks' articles on Operative Technics in the present issue marks the partial fulfillment of an important work tending to facilitate the teaching of operative dentistry in our colleges. The next step will be the publication of the series in book form for the use of students. The work will be properly indexed and additional matter incorporated to make it as complete as possible. The National Association of Dental Faculties have adopted the work as a text-book, which of itself is a recommendation of its merits. The book will be out by the time the colleges open for the fall term.

ANONYMOUS COMMUNICATIONS.

We are in receipt of several communications which in themselves are interesting, and which we should be pleased to publish were it not for the fact that the writers have failed to attach their names. It is not always necessary that the name of the writer should be published, but it always *is* necessary that it be known to the editor.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

NEW YORK, August, 1894.

To the Editor of the Dental Review :

Although all is quiet in and about New York, here and there we get an echo—and it is being repeated—so that already there has been a general emphasis that the coming celebration of the discovery of anæsthesia should focalize at Hartford City and make this place the great coming together, and to do the occasion the honor that it justly deserves, every one italicizes our highly honored oral surgeon, Professor Garretson, of Philadelphia, as the one above all our number richly able to be the orator of the day. Prof. Garretson is widely known for his preëminent skill as a surgeon among both professions, medical and dental, and as a writer he stands in high distinction. We would all greet him with pride. With such men in charge of this celebration at Hartford, as Drs. McManus and

Parmlee and their co-laborers, we can be assured that a high grade of stimulus will grace the occasion and make it a day of proud distinction for our calling. So far as this vicinity voices, it is thought to be unwise to divide the one purpose, that is the honor due to Dr. Wells. So it is said, if not possible by a personal presence, then in the spirit of grateful recognition of this divine gift to suffering humanity through one of our fellows, join with Hartford in a celebration that will honor us. It is not so much what we can do but what is the best thing to do.

A late patient has impressed this thought upon our mind. Age beween seventeen and eighteen, bilious, nervous temperament, a full number of teeth save one first permanent molar, which was removed from the left lower jaw because of extreme decay. This tooth was removed, as nearly as we could learn, about four years ago. The second molar has tipped forward. The third molar is the only perfect molar free from decay; it is fully developed, which is not the case with the other three, they being so badly decayed that the pulps have been lost. Besides the pulp cavities in the two bicuspids we have filled some twenty-four cavities mostly large. Nothing had been done previously for saving these teeth except the removal of this six year molar ; yet this was not the purpose of the practitioner, but it has proved a salvatory operation, there only being required one minor grinding fissure filling on that side of the lower jaw. Now if all the six year molars had been removed about the twelfth year, doubtless there would have been seven-eighths less service required and there would have been well developed third molars and no decay. The upper jaw is quite narrow and the teeth more or less crowded from the six year molars forward. This case is a sample one of thousands. This patient has suffered a good deal from nervous irritation and had delayed attention to the teeth because of fear. While we feel that we have put this mouth into a fair degree of health, yet far more could have been done by the course that we have suggested, and the future conservation made much greater, with less discomfort and expense. We are free to say that in our judgment these cases call for a wiser consideration. Wisdom teeth have had an unenviable reputation more from a lack of wise practice than from a necessity. We are fearless to declare that if this wisdom in practice would become more largely the rule rather than the exception that not many years would intervene before we would see demonstrated the fact that these commonly condemned teeth would prove superior to any others. In this age of boasted reason we think that attention to intelligent conclusions is the need of the hour rather than to the prevalent mode of dealing with such matters. There is far too little of résumé in our society methods. Very rarely do we find a defender of the golden mean. May it not be true that in the present age we neglect needed attention to these things because of a tendency to practice in special lines? The coming practitioner who will consult the best interests of his clientele in conserving labor and expense will become the largest almoner for good.

The *Pacific Coast Dentist* for July is by our side. Dr. Younger has given us another view of pyorrhœa alveolaris—if not another, a somewhat varied one. We do not see how Dr. Craven's treatise, that declares for sure cure of this disease (if it be one—there is so much difference of opinion) can do more, for Dr. Younger emphasizes the same sure cure—absolute, sure, every time. We wonder what is meant by a constitutional origin, as some put it. Not a few people break down with phthisis but their teeth do not show any signs of this disturbance. Health is a resistant quality that laughs at an invading foe. Now the fact that many invasions occur in the human amœba proves to our intelligence that the health has become impaired in a degree. The presence of what Dr. Younger terms the "vulgar tartar" is a decided sign that health is impaired, for health does not admit of the disturbed condition of the glands which secrete the fluid that holds the matter which forms the tartar. Many and many a time have we taken charge of a mouth that one could almost tie the saliva in knots and carry it all around the office, but by putting it in a state of cleanliness—and health which means cleanliness—the saliva would become like spring water, flooding the teeth and surroundings and giving a show of vigor that was a delight to look upon. In the first vitiated condition, the teeth would be slimy and coated with deposits, but in the latter condition everything would preserve its cleansed state; and more, the whole system would respond to a decidedly higher toned grade of physiological expression. We claim that in the first instance a lessened energy of the nervous system has prevailed to a greater or lesser degree to permit such a change in the secretions from their normal standard. There are many phases and complications that enter into the intelligent dealing with these cases. "If the knowledge of the etiology of a disease is not needed" then we do not see the value of the higher grade of definite intelligence that is being gained by the microscope. Prof. Pierce, Black, Sudduth and such men are certainly bringing gleams of intelligence into our arena and we are going to know the deeper knowledge that is hidden; but for the treasures we must dig, and the diggers are going to find them we feel sure. In the mean time we hail anything that will emphasize the practical application of theories. We just want to give a passing word relative to the treatise by Dr. Cravens, noticed in the July REVIEW, "The Sure Cure." It certainly impresses us unfavorably but we hope to be in possession of the facts by reading what the Doctor has to say and then review it on its seeming merits. Dr. Younger makes mention of Dr. Peirson's previous use of the rubber dam in his presidential address at the opening of the Pacific Congress. It is put in as a claim for California. We think in making such a claim it would have been well to have had it substantiated by proof —not but what it may be all true, but it will not pass current throughout the profession, and it is easy to see why. Many will recall the attempt to clip the late Dr. Barnum's honors by a previous claim put in by Dr. LaRoche, of New York City. It has never passed current. Reference to the journals will refresh the mind of the reader. The same thing is coming in for a claim in the face of the late Dr. Wells' discovery of anæsthesia of which we are soon to take honorable notice after fifty years; and after fifty years more who knows but what others will come to the notice of the future practitioners and be remembered, possibly our Atkinson? New Jersey was moved in this line. What have they done with that Memorial to Congress regarding the protecting of processes in the mouth? By the way, what a lot of dental history that man Scott, the Iron Man, got into his speech at the Mid-Winter Congress. New York men are wondering who told him all these things which he made honorable mention of. We hope really that the A. D. A. will go to San Francisco in '95. Only think how some of the members would be elevated in the high altitudes on the way back. The strike has been hard on some that went out this season. Dr. Parmly Brown got on a bridge to find both abutments gone when he got as far as Sacramento on his way back; nothing could be heard of him from July 6, to the 23d. Nobody knows where Bonwill is anyhow, but he will invent himself out in any event. We notice that "some things transpired" at the M. W. Congress, "which all will be sorry for," but on the whole it was a nice Congress.

Not a bad place to go during the hot term—the Arctic regions. Dr. Roswell Stebbins, of New York, is one of the fortunate seventy who have gone on this trip in company with college professors, surgeons, scientific men, et cetera. Dr. Stebbins is a modest dentist of New York City, but has the good fortune to be in the swim with many of the medical fraternity, such as Dr. Shrady and others. He has a decided mechanical ability, and is a young man in the confidences of an increasing clientele. Mr. Gould, of yachting notoriety with the Prince of Wales, is a patient of the Doctor's. If any one chance to visit the Army and Navy Museum in Washington, let him examine the valuable collection of models representing first and second dentition in its varied phases. They are object lessons. This collection was prepared by Dr. Stebbins. It evidences a vast amount of painstaking labor, and reflects great credit upon him. This collection was offered to New York, but it had no place of deposit suitable at that time. The Odontological Society has a very creditable beginning now, the ambition of Prof. Barrett, of Buffalo. This collection of osteological specimens is said to be beyond duplication and value. It gives a scientific atmosphere such as no other meeting room of dentists can boast of, and cannot fail to become largely increased in the future. If New York cannot have the headquarters of a dental gathering that has been so much desired, there should be some gratitude for the little nucleus of interest that has been established by the Odontological Society. Although it started as a kid glove dental aristocracy, it is farther ahead in its democracy to-day than the First District Society. Dr. Richard Winder, of Baltimore, has recently vacated his earthly sphere, and joined the great procession en route to that bourne whence no traveler returns. He was familiarly known as Dick, Major, Professor, etc.

He has not failed to make his impress on the world in various ways. We remember that during the Civil War of our country he was a resident Virginian of the real type. He emerged from the conflict and gave his attention to the acquisition of dental knowledge, and having an unusual amount of native ability and a brainy head, he was not slow in making himself a factor in dental activities which his history in Baltimore will vouch for. He found a strong and admiring ally in Dr. Benj. F. Coy, who held a favored position in his profession not only because he had acquired an enviable clientele hardly second to any in the country, but because Dr. Coy had joined his brilliant ability to the association of the fraternal and progressive movement that was so powerfully going over all our profession like a tidal wave at that time. Together with Prof. Winder, they caught the spirit of this progress, and in their estimation they conceived an onward movement. It took tangible shape in the organization of the Maryland Dental College for the purpose of graduating dentists on their knowledge. For a time things went on glowingly. Dr. Atkinson gave this school his hearty support, as it seemed to be thought that there could be a larger deal of liberality on a more enduring foundation, a movement was fostered to join the progressive with antiquity, and finally, after a good deal of brewing and fomenting, progress carried the day, and the new school was merged into the Baltimore Dental College—known as the first and oldest dental school in the world. Both of these men that left their impress on dental matters are now gone; it behooves those remaining to gather up the fruits of their labors and let nothing be lost. Speaking of schools, we met on the street one of Jersey's lucky dentists, since the meeting at Asbury Park. It seems "it was a rouser"—about 200 present. Some of our best material there, such as Garretson, Truman, Pierce, Flagg, and others; and it was an opportune time to let the breezes fly through the "green room" of the colleges.

Bro. Welch says in the *Items* that "we make our own heaven." We do not understand it so; rather it is given us if we will accept it. Far too many reject it. This is the way we understand it, and the authority is St. Paul: "Christ is the heaven." "Not I, but Christ that liveth in me." We know that Bro. Welch has been a Methodist preacher, and we are not a little surprised that he is astray in his theology. We think a good deal of the Doctor and we do not want him to stand in a false position.

"Seeing, we do not perceive." A practitioner once exclaimed that he was done giving clinics and gave this reason: "I was demonstrating at a clinic how I dealt with sensitive dentine, and applying the dam proceeded to throw a jet of heated atomized oil of cinnamon upon a molar that was largely deprived of its enamel covering, being excessively sensitive. After succeeding absolutely, I was asked, by a looker on, if that was a dead tooth?" This questioner was in charge of a large practice, a graduate of a dental college. This reminds us of a call from California—where so much was known before we knew it. The caller was asked if he dealt with Riggs' disease with the Riggs' instruments. "Oh, yes," was the reply. This was in our reception room. A few minutes later, being in our operating room, our Riggs' instruments lay on our table, and he took them up and said, "Doctor, which edge of the blade do you use next to the tooth?" Dr. Riggs when in London enlisted a good deal of interest in his clinics. Some two years after, a gentleman who saw these clinics visited this country and called upon the Doctor at Hartford. He was telling him that he found some difficulty in keeping the cutting edge of the blade from wounding the gum. The doctor says, "Show me how you use the instrument." He seeing at once his misuse kindly said, "You use the oval edge next the gum and it will work more smoothly." It is line upon line that tells. We were once showing a student an operation in process in which we had overcome a great difficulty. This a three months' student blandly told us was the way he did it.

Occasionally a stray practitioner appears on our New York avenues from a foreign clime. Dr. Jenkins, of Dresden, a worthy representative of our craft, has been with us. He is an American, for many years in Europe. He enjoys the distinction of being known as the "Court Dentist," and the Royal family is fortunate in his superior services. Dr. Jenkins was called to this country on a visit of anxiety because of the sickness of a son. He has made his hotel at the Lotus Club by the courtesy of a staunch friend. Nothing like reciprocity in friendships. They are not of too frequent occurrence among the motly pageantry of humanity which fills our crowded thoroughfares. Dr. Richard Patton Cook in his seventy-second year has died. He was a practitioner of dentistry for many years in New York, although probably quite unknown among society dentists. He occupied an office for a term of years in Dr. Bogue's house in 20th Street. We have known that a practitioner of this name existed in New York but we do not know that we ever saw him in all our visitations. This is possible in a cosmopolitan city like ours. We were inquiring only a few days since of an old practitioner regarding Dr. Dunning of enviable repute, and we found him almost unknown by him. This was not strange, for Dr. Dunning was exclusive to the extreme, and boasted of it. He has been termed the "Gilt Edge Dentist." His clientele was that part which came under his direct charge. We met only a few days since an old German music teacher who was for many years connected with the school of celebrity, at that time presided over by Miss Sedgwick the poetess, in Lenox, Western Massachusetts. He knew Dr. Dunning at this period, by his summer visits to this place, professionally. So much sought was he by the moneyed aristocracy, that his time at this resort was in eager demand at the same fees that he commanded in his city practice—$15 per hour. While we have a larger, wiser and more conserving practice in these days, none are now more skillful and painstaking than he—as he believed. We know of none of his followers ever having evidenced that his mantle had fallen on them, while they have followed in his line of cold exclusiveness. We freely admit that a practice made up of refined people is something much to be desired; and there is a courtesy of appreciation that is not so usually manifested with the more mixed people. Never did we appreciate this more than while in a ten months' association in 1876 with Dr. B. F. Coy. Dr. Coy was at that time at the zenith of his Baltimore fame. He had been made President of the new Maryland Dental College and had become an active participant of the national progressive tidal wave at that time so conducive to helpfulness to all who associated in it. Dr. Coy had—he being a tactician of no mean caliber—caught sight of its value to him individually, and he did not wait for those of his immediate circle at home, but soon proved to them that it was for their interest also to be in the swim. Dr. Coy was able to carry all these helps into practical use by emphasizing them to his already admiring patients, and it did enhance his already admired skill in their estimation. We never met the dentist who handled his tactics so much to his advantage, and so pleasingly to his patrons. Just at this time Dr. Coy found himself impaired physically. He sought our association by a generous offer, taking us in on equal terms. We too were in the zenith of enthusiasm over our invention, the "convex smooth faced fillers," heavy gold, nothing less than No. 10 to 120, heavy mallet and wide-awake assistant. The Doctor gave us carte blanche introduction, and never could there have been a more pleasant association of that ten months. So many are seeking practical things we will tell them how it works to make an association congenial. Dr. Coy had placed his fees minimum from $7.00 to $50.00; we did the first six months a little over $12,000.00. We were given an introduction without stint, and rarely did one leave our hands without thanking us for our services. We shall always look back to this luxurious ten months' practice as the *most* enjoyable. We never made a fee; we always left this for the Doctor. We were literally free from the business part, which has always been to us the *bete noire* of dental practice, and which we do not like any better as we grow older. A new fly has appeared at Coney Island. It is a green one and it has been sticking the bathers. It has been queried if this is the same species that has appeared among the dentists hailing from Indiana—his name being Greene. It is claimed a great success because of its sticking quality and it "sticks" the gums. Anyhow it helps to do what all old-fashioned practitioners used to say "sell the job." We notice this Greene fellow has been studying "eminent dentists" (a good many have been doing the same thing and they find that they are a "study"), and they are quite common. We think these "eminent dentists" have not done the clean thing by Greene. While he has shown them how nicely his method "sticks teeth to the gums," they won't let him use their names to endorse the method, because "it would violate the code of ethics." Dr. Talbot is reported as saying at the Pacific Congress that no "scientific advance has been made during the last twenty-five years"—which started an anvil chorus. At once a special order was given to a committee of one to provide a "sledge hammer of large dimensions," which was used during the entire session. A younger man could only have suggested such a thing, yet, it is said that style is effective on the frontier.

QUID NUNC.

CHICAGO, August 14, 1894.

Editor Dental Review.

DEAR SIR:—Although numerous strange and peculiar abnormalities of the human jaws are annually recorded, I desire to submit the following case to the readers of the DENTAL REVIEW, being impressed with the idea that it may be of interest to some, inasmuch as some of the pathological conditions, are, I believe, infrequently met with.

I was last week visited by a young man presumably about twenty years of age, whose appearance indicated the presence of a badly abscessed tooth, but after an examination and some questioning, I learned the following: Some five years ago he had been bothered with a troublesome tooth, a lower first permanent molar, which occasioned him to seek the services of a dentist. This he did, and the tooth was removed, but in conjunction with the extraction the lower jaw was disarticulated, and, whether through ignorance of the result of the operation, or, through lack of knowledge of procedure, on the part of the dentist, the disarticulated member was never reset. The patient says he suffered great pain for some time afterward, and experienced considerable difficulty in closing the jaws, but being of the lower class, the services of the dentist or physician were not solicited, and the suffering endured with fortitude, until nature should come to his relief, which she has done, resulting in the formation of a new articulation in the glenoid cavity, which allows the jaws to close, with the lower anterior teeth protruding about one-fourth of an inch beyond the upper ones, the lower posterior teeth on the right side occluding considerably on the outside of the upper, and on the left considerably on the inside, bringing the median line of the lower teeth over to a point even with the right lateral cuspid interproximate space. It is almost impossible to perceive or feel the coracoid process of the inferior maxillary on the left side of the face, but on the right side it assumes a marked and conspicuous prominence, and in fact the whole right side of the face presents the appearance of being swollen to twice its normal proportion. He now experiences no difficulty in masticating and has not for three or four years, but a desire on his part to ascertain if the "swelling could be reduced" led him to consult the dentist.

H. J. GOSLEE.

PAMPHLETS RECEIVED.

THE EFFECT OF EXERCISE UPON THE TEETH. By A. Hugh Hipple, L. D. S., D. D. S., Omaha. Reprinted from the *New York Medical Journal* for June 16, 1894.

DENTISTRY IN ITS RELATION TO GENERAL MEDICINE. By George H. Chance, D. D. S., Portland, Oregon. A paper read before the Midwinter Fair Dental Congress and reprinted from the *Pacific Coast Dentist*.

THE DENTAL INSTRUCTOR. An Illustrated Manual of Popular Dental Instruction. By the Isaac Knapp Dental Coterie, Fort Wayne, Ind., 1894.

A pamphlet of sixty-four pages filled with useful information for the masses. This is a movement in the right direction by the right kind of men, and must result in good.

MEMORANDA.

Dr. W. G. A. Bonwill spent a few days in Chicago recently.

Dr. Geo. W. Field, of London, England, is at the Auditorium.

The State Board of Dental Examiners will meet in Springfield Wednesday, September 26, at 10 A. M., in the State House.

Dr. T. W. Brophy recommends points cut from sole leather instead of moose hide for polishing fillings. They are firmer, retain their form better under moisture, and are more effective in removing scratches on the surfaces of fillings.

When a truant editor spends more than a month out of the city lying under the trees, kicking up his heels at the stars, breathing pure air for once in a year, shooting (at) ducks and fishing by the light of the moon—or a lantern, he finds very little opportunity for picking up items for "memoranda."

Dr. J. Austin Dunn has originated a new point for his well-known syringe that we believe will prove the best thing of the kind ever used. It is made of iridium and platinum, is durable, stiff, will wear smooth, and can readily be bent to any angle by the thumb and finger. The price is so reduced that no dentist need be without a good supply of points for use with different kinds of drugs.

The recent meeting of the Minnesota State Dental Society was most successful. The DENTAL REVIEW was made the official publication of the Society, and will give a full report in a coming issue. The following officers were elected: President, Dr. C. H. Robinson, Wabasha; Vice President, Dr. Scipio Bond, Anoka; Secretary, Dr. H. S. Cruttenden, Northfield; Treasurer, Dr. H. M. Reid, Minneapolis; Chief of Clinics, Dr. Geo. H. Monson, St Paul.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

The American Dental Society of Europe met at Geneva, Switzerland, August 6, 7, 8.

Although the attendance was small the proceedings awakened continuous interest. Prof. W. D. Miller, of Berlin, sent a report of a case in practice bearing upon the recent discussions of pyorrhœa, and described experiments to test the relative adaptation of cohesive and noncohesive gold to an irregular surface under low pressure. Dr. Royce, of Tunbridge Wells, Eng., reported experiments upon two weeks' old puppies with a view to determine the direct action of mercury upon the formation of enamel, and advanced the theory that "Hutchinson teeth" may be caused by hereditary mercurialization rather than by hereditary syphilis. His experiments, yet incomplete, will be awaited with interest. Dr. Bryan, of Basel, exhibited the Basel electric engine motor, with accumulators and instantaneous stop. Professors Eternod and Vulliet, of Geneva University, gave most interesting demonstrations, accompanied by anatomical and microscopical specimens and ingenious apparatus on subjects closely allied to dentistry; and Dr. Luce, of Stuttgart, and others, presented papers and models that were the occasion of profitable discussion. The next meeting will be held at Boulogne, France, on the first Monday in August, '95.

The following officers were chosen for the year 1894–5. President, Dr. Chas. W. Jenkins, Zürich; Vice President, Dr. Wm. Mitchell, London; Treasurer, Dr. Chas. J. Monk, Wiesbaden; Secretary, Dr. Wm. S. Davenport, Paris.

Executive Committee—Drs. G. C. Daboll and A. C Hugenschmidt, of Paris, and Dr. C. W. Jenkins, of Zürich.

Membership Committee—Drs. Wm. Mitchell, L. C. Bryan and Waldo E. Royce.

CHAS. W. JENKINS, *Secretary.*

PROCEEDINGS OF SOCIETIES.—THE MEETINGS AT OLD POINT COMFORT.

REPORTED FOR THE DENTAL REVIEW, BY DR. T. E. WEEKS.

It was somewhat of a siege, from August 2 to August 10. Some three hundred dentists under one roof; not so many during the whole time, but for two or three days they swarmed in the lobby, corridors, on the broad verandas, and in the water. Even Callahan and Cattell displayed their manly forms in company with William O. Kulp and Bro. Turner. In fact, everybody took a bath and had a good time. However, the meetings were well attended.

The sessions of the several bodies frequently occurred simultaneously, and as it is impossible for one to be omnipresent, this must necessarily be a one-man view of the meetings.

First the Southern. As Dr. B. Holly Smith makes a good presiding officer, the meetings were conducted with promptness. Dr. J. Y. Crawford, as master of clinics, was untiring in his efforts to have the clinics conducted as per schedule and to give all who wished an equal chance to see. With few exceptions, the majority of the clinicians were Southern men. Dr. Jackson, of New York, demonstrated his methods of regulating teeth. Dr. Marshall, of Chicago, treated an abscess by extraction and replanting, Dr. Hollingsworth making the splint. Dr. Hollingsworth also made a bridge, demonstrating his crown system. Considerable interest was manifested in the injection of local anæsthetics for painless extraction. The writer gathered that our Southern brothers are not behind the North in the search after the great desideratum—painless dentistry; but when an attempt was made to introduce clinics in which an agent was used, some portion of the composition or combination being kept secret, the society promptly squelched it, declaring that it was inconsistent with the true professional spirit. Good for the S. D. A.!

The writer failed to see any marked advance, except it might be some improvement in the formulæ. It appeared also that it either required a great amount of force to introduce the needle for the injection of the anæsthetic used, or the needles were of a very poor quality. We judge from the number broken. There were numerous little improvements in methods and devices for facilitating operations. One that demanded notice is a mandril for carrying sandpaper discs;

also some sandpaper discs so prepared as to be insoluble in the saliva. These are the inventions of Dr. Browne, of Atlanta, Ga.

As a whole, the clinics were up to the average, but they confirmed us in the opinion that clinicians, as a rule, do not come properly prepared to demonstrate their methods. Many operations could be much better demonstrated upon models or teeth mounted in such a way as to be conveniently handled. Then the operator should either be placed on a raised platform, or, if on the floor, surrounded by a series of steps upon which the spectators could stand In this way, the number of patients necessary would be reduced and the operator could have just the teeth he wanted. If such preparations were made by the superintendent of clinics, and each operator took pains to prepare models or illustrations of his operation in its several stages, clinics would be much more helpful.

The President paid his respects to the subject, under the query, "Clinics, can they be employed profitably in all classes of societies?" The other points in his address which were recommended by the committee for action, were "Duty of National and State Associations to local societies," "Dental Boards," "Uniformity in laws," and "To what extent can National Association do for dental education?"

While the general field of dentistry and operations pertaining to its various branches was pretty well covered in the essays and discussions, education and laws received the largest share of attention. Dr. Carr, of North Carolina, acting chairman of committee on education, made the points that the elementary medical branches were necessary to dental education, and that private tuition was next to useless. He also advocated the publishing of instructive articles in the daily press, for the purpose of educating the public.

Dr. Noble, of Washington, D. C., chairman of committee on legislation, expressed the opinion that a diploma should be a certificate; that boards should have the power to expel from practice unworthy practitioners, and make less of a point of stopping "boys" with diplomas, from practice; that if boards examine at all, they should do so *before* diploma is granted. Teachers in colleges should be on boards, to insure harmony between boards and colleges; that a committee should be appointed from both national bodies, to take steps toward improving dental laws.

Dr. Sweney, of Washington, D. C., in a paper, emphatically declared that laws should define malpractice, rather than terrify young graduates and practitioners moving from one State to another; that laws should have provisions for revoking licenses. He said that advertising by false statements is a violation of the spirit of all law, and present dental laws are wrong and unjust.

Dr. C. N. Pierce, in opening the discussion on legislation, expressed himself as not in sympathy with criticism of present legislation. Forty colleges teaching, forty more with charters, but not active. He claims that colleges induce students to come in sufficient numbers to make them pay, which fact makes legislation necessary; that existing laws all look toward advancement. Every student should go before a board of competent men who are not his teachers, and colleges should teach, not grant diplomas. Dr. Catching, in supporting Dr. Pierce, said, "Good colleges are not averse to having their students examined." Dr. Pierce, resuming, called attention to the fact that we are in a transition state. State boards are means of improvement. Certificates from one State ought to be good in any State in the union.

Dr. McKellops was in favor of a law to govern colleges, and of one Board whose recognition of a degree should be good in all the States of the Union.

Dr. R. R. Freeman believed in better preliminary education; regretted that we have not the advantages of the law before the community. In the law, dishonesty disbars from practice. He said, further, "You say we are influenced by selfish motives. Can't we rise above selfishness?" To do right is the thing to give men prosperity.

Dr. Barrett was called upon to give the status of preliminary examinations, as conducted by the University of the State of New York. (This has been printed in several journals).

Dr. Frank Abbott corrected some of Dr. Barrett's statements, and enlarged upon the subject. Both gentlemen seemed to feel that as far as preliminary education was concerned, the millennium had arrived in the State of New York. Several gentlemen questioned this, and Dr. W. H. Morgan, in a sarcastic and dramatic speech, proceeded to puncture the system. He said, "The gentlemen have painted a roseate picture. A corrupt fountain begets a corrupt stream. If we are to believe the New York papers, Albany is the most corrupt place on the continent." He implied that the position of regent was an honorable one, and men sought the honor and were appointed for political reasons. He made much sport of boards appointed by legislatures, and said, "It is an axiom that the farther the examination is removed from the teachers, the less sure are the results. Men on boards may not be competent. I cannot understand how so many scalawags ever got through the regents' board as are met with in the south." The doctor's popularity was evidenced by the hearty applause he received.

All together, the meetings were enjoyable and interesting. A committee was appointed to confer with a similar committee from the American Association in regard to the merging of the two national bodies into one.

AMERICAN DENTAL ASSOCIATION.

After listening to a brief but hearty address of welcome by Dr. Campbell, President of the Virginia State Dental Association, which was also in session at the Hygiea Hotel, the business of the meeting began. A telegram of greeting was sent to the American Dental Society of Europe, then in session at Geneva, Switzerland. The Association voted to appropriate $500 to the Executive Committee of the World's Columbian Dental Congress, to apply on the deficit existing in the treasury of that committee. The Association hopes to be reimbursed by the sale of the proceedings of the Congress, copies of which can be had for $10 each, from Dr. J. S. Marshall, Chicago.

Dr. Thomas, of Philadelphia, announced the holding of a meeting in December, which is to be a semicentennial celebration of the discovery of anæsthesia. A committee was appointed to perfect arrangements. Announcement of these arrangements will appear in another issue of the REVIEW. At this meeting in Philadelphia, occupying but one day, two papers will be presented, one on the "History of Nitrous Oxide" and one on "The Benefits of Anæsthesia from a Surgical Standpoint." There will be a banquet in the evening.

On motion of Dr. McMannus, the Association voted to reaffirm its former action in giving credit to Horace Wells as the discoverer of anæsthesia.

A committee of three was appointed to confer with like committees from similar organizations, in an effort to unify the laws regulating the practice of dentistry in the several States.

A motion to reëstablish clinics as a feature of the meetings was tabled.

On motion of Dr. Harlan, it was decided that two general essays be delivered at each annual meeting,subjects to be chosen by the third section of the Executive Committee. The essays for next year are "Antiseptic Surgery," Dr. A. W. Harlan; "The Business of Dentistry," Dr. Louis Jack.

On motion of Dr. Boice, a committee of three was appointed to give the history of the census relating to the classification of dentists.

On motion of Dr. Taft, a committee of five was appointed to thoroughly investigate the subject of pyorrhœa and report at next annual meeting.

On motion of Dr. Guilford, a committee of nine was appointed to make a careful and comprehensive report upon nomenclature at the next regular meeting.

On motion of Dr. Fillebrown, a committee of five was appointed to confer with the similar committee of the Southern Dental Associatian on the Union of the two bodies.

The action upon revision of the constitution was deferred, pending the action of the committees on consolidation.

A motion by Dr. Jack, that topics be issued to State and local societies, under authority of American Dental Association was carried.

Action was taken advising chairmen of sections to urge each member of their sections to do something.

REPORTS OF SECTIONS.

SECTION I. Dr. R. M. Sanger, Chairman, offered an exhibit of a new furnace by Dr. W. E. Sharp, Binghampton, N. Y., which is designed for the general melting of metals, casting aluminum, fusing continuous gum body and enamel. It has a supplemental furnace for heating up continuous gum cases.

Dr. George Evans, of New York, described a method of making hollow gold dummies for bridge work. They are hermetically sealed, and their bases strengthened by fusing a ball of solder on the inside. He also described a porcelain-faced crown without the band covering the labial face of the root. The cap was platinum, fitted by a method of his own, and the cervical bevel of the porcelain face was covered with platinum foil, which gives a closer adaptation than any other method.

Dr. L. E. Custer described a method of fusing platinum by the arc current, giving a demonstration of it during the meeting.

Dr. Bogue described a swaging apparatus, in which hydraulic pressure is used.

Dr. W. St. George Elliott described Mr. Humbey's process of steam swaging. The action takes place in a steam boiler with spherical top. The model is inverted under this dome, the metal placed upon it, and forced by the pressure of the steam to form of model.

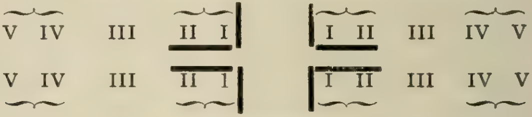
A paper on bridges, by Dr. W. N. Morrison, was read by title.

No discussions in this section.

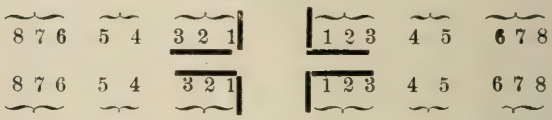
SEC. II. Dr. Ottofy, Chairman, reported forty-four schools teaching dentistry. In the last college year there were 2,800 matriculates and 600 graduates, 500 of whom graduated from ten colleges. There are thirty-three colleges in the National Association of Dental Faculties. He discouraged the addition of dental departments to medical colleges; advocated the possession of the bachelor's degree by all matriculates, and the extension of the school year to nine months; also, that foreigners should have a knowledge of English before being admitted to colleges, and that colleges should not attempt to teach more students than they have facilities for. Students at matriculation should be required to conform to the code of ethics, be required to show a clear record for at least two years previous to their matriculation, and should be ethical during their college course. Diplomas should be held during good behavior only, the colleges having the power to revoke diplomas. He reported as an advance, the organization of the National School of Dental Technics, an association of teachers of technics in the colleges belonging to the National Association of Dental Faculties. He commended the plan adopted by the school, of having annually a synopsis of the work performed by each teacher in the school, with a report of any improvement in the methods of teaching, as employed by them. He noticed the adoption of an optional fourth year in the colleges belonging to the Universities of Michigan and Minnesota. He expressed the opinion that the World's Columbian Dental Congress had been an important factor in dental education, and deplored the difficulty of having any uniform nomenclature adopted.

Dr. Guilford, in reporting upon literature, recommended for favorable notice, Dr. Bödecker's work on Dental Anatomy and Pathology, also Week's Manual of Operative Technics. To avoid the confusion caused by the introduction of so many systems of nomenclature, he recommended the adoption of Dr. S. B. Palmer's system of nomenclature, modified by Dr. Dickinson's suggestion of the use of the Roman numerals for the deciduous teeth as used in the University of Minnesota.

DENTAL NOTATION—DECIDUOUS TEETH.



PERMANENT TEETH.



Under this section, Dr. M. L. Rhein offered a paper, suggesting a nomenclature for pyorrhœa alveolaris.

General term, pyorrhœa alveolaris.

I. Pyorrhœa simplex (local).

II. Pyorrhœa complex, subdivided as follows:

A. Chronic diseases.—1. Gout. 2. Diabetes. 3. Chronic rheumatism. 4. Bright's disease. 5. Scurvy. 6. Chlorosis. 7. Anæmia. 8. Leucæmia. 9. Pregnancy.

B. Acute diseases.—1. Typhoid fever. 2. Tuberculosis. 3. Malaria. 4. Acute rheumatism. 5. Pleurisy. 6. Pericarditis. 7. Syphilis.

C. Nervous diseases.—1. Cerebral diseases. 2. Spinal diseases. 3. Neurasthenia. 4. Hysteria.

D. Diseases resulting from the toxic effect of drugs. 1. Mercury. 2 Lead. 3. Iodine.

E. Pyorrhœa sequentia,—disease left behind after primary disease has been cured.

Sec. III. Passed.

Sec. IV. No report.

Sec. V. Dr. A. W. Harlan, Chairman, reported noticing Dr. Schriers' method of cleansing canals with kalium-natrium, and insisted upon the use of the rubber dam when this method was employed. He also noticed Dr. Callahan's method of opening root canals by the use of sulphuric acid, and suggested the application of the milk of magnesia to counteract the action of the acid. He was pleased to note an increase in knowledge and interest on the part of the profession, and noticed some remedies; pyrozone, three per cent solution, as a valuable diagnostic; Phillip's milk of magnesia as an excellent antacid; tri-chloracetic acid, one per cent solution, as a mouth wash to be used for one week; alumnol, solution of five to eight per cent, as an astringent and stimulant; silver nitrate, styptic and stimulant. He advocated systemic treatment where zymotic or constitutional diseases exist, and commended gum massage, using solution of Ceylon cinnamon, with a little tannic acid added to solution, as a valuable aid in the treatment of the soft tissues.

Under this section, Dr. J. S. Cassidy presented formalin for penetrating inaccessible root canals and embalming their contents. As gas escapes from the aqueous solution, it is capable of being absorbed by solids. Experiments out of the mouth show that it completely cooks muscular tissue; unites permanently with albumen, the yolk of an egg, solidifying, as if boiled hard. It is not a poison, does not corrode instruments, and a one to three per cent solution will completely disinfect pus, broken down tissue, etc.

Sec. VI. Dr. H. A. Smith, Chairman, read a review of Dr. C. N. Pierce's paper on the gouty diathesis in pyorrhœa; of Dr. G. V. Black's paper in July Review. He also reviewed Dr. J. E. Craven's work on pyorrhœa, and Dr. E. S. Talbot's book on the etiology of irregularities.

Dr. S. B. Palmer read a paper, "Etiology of Caries," covering the use of tin and gold at cervical margins and the filling of root canals, based upon the difference in potential of different substances. In discussing this paper, Dr. Frank Abbott stated it impossible to dry canals thoroughly; advocated aqueous solutions, such as mercury bichloride instead of carbolic acid, essential oils, etc., as advocated by Dr. Palmer; believed that filling teeth when "periosteum" was inflamed, is a therapeutic measure; closing canals shuts out all irritant matter; cited the filling, with good results, of several canals where a cyst the size of a hazelnut existed.

Dr. Crawford said that the lumps, as described by Dr. Abbott, were of two forms, one a pus sac, the other an indurated cyst, and inquired what became of the pus.

Dr. Harlan asked Dr. Palmer how gutta-percha or essential oils are oxidized in canals, and why the men who laid the Atlantic cable used an oxidizable substance in laying this cable. He said that gutta-percha is one of the best substances for filling root canals. The honor of using tin and gold belonged to Dr. Abbott in Berlin, and Dr. Westcott in America, thirty years before the "new departure" was born. Dr. Palmer was not its originator. The electro-chemical theory started with Dr. Bridgman. Miller and Black have destroyed all foundation for the electro-chemical theory. Caries is produced by the waste products of micro-örganisms. Miller's experiments must stand.

Dr. J. S. Marshall said that few men ever thought of putting tin or amalgam at the cervical margins until Dr. Palmer advocated it. Dr. Palmer made the statement that all elements are either positive or negative, foods eaten in pairs, show by the galvanometer that one is positive, the other negative. Dr. Palmer does not antagonize Miller's theory. He was speaking of secondary decay. Electro-chemical action is the result of the presentation of metals to tooth substance. Dr. Palmer's point was to explain *how* many failures came about. He was the first to give a scientific explanation of *why* tin and gold were used.

Dr. Harlan replied that the causes which produced decay in the first place, produce it in the second. Gold is inert and unchangeable.

Dr. Crawford inquired of Dr. Harlan which pole attracts an acid and which one attracts an alkali. It has been stated that one pole attracts the one, and the opposite pole attracts the other. If this is so, the electro-chemical action may have some bearing. He believes as Dr. Harlan does, but thinks that many influences are active.

Dr. Jack thought that if the theory were correct, all margins would be equally affected, whereas we find the cervical margin the weak point. Miller's and Black's theory accounts for cervical failure.

Dr. Abbott said that if a filling were equally perfect at all points, it would not fail at any point. He claimed that imperfect manipulation is the cause of failures. In order to start decay, we must have something which will solve lime salts ; this we may have by either theory. An imperfection will assist in the establishment and passage of a current ; acids in such imperfections intensify action.

Dr. Palmer said he did not antagonize any theory ; differences arise because men fail to understand. Dr. Miller harmed the electro-chemical theory when he said that a tooth was not an electrolyte. In proportion as it permits mobility of molecules, it is an electrolyte. There is mobility of the molecules in children's teeth, and in all soft teeth. Any metal placed in the mouth, assumes potentials as soon as it is wet. Every filling, crown or bridge, is galvanic ; the current does not act upon a normal tooth ; bruised or injured tooth substance is affected. The sensitiveness arising from a loose gold filling is accounted for only by the electro-chemical theory. He only wished to find out how far gold will preserve tin. In using gold and tin, he would wet the surface of each layer, because if dry, no action will take place ; if wet, an alloy results. Alloy of the two metals is what is desired.

Dr Truman called attention to the fact that if cotton instead of gold were placed in the cavity, sensitiveness would result.

Dr. Palmer explained that the action under cotton was putrefaction ; purely chemical, not elecro-chemical.

In the discussion on the etiology of pyorrhœa, Dr. Abbott believed the disease due to both local and systemic causes ; improper assimilation is one cause of the disease.

Dr. Taft said that matter for deposits comes into the territory in solution, and is deposited on the root, because its solvent can no longer hold it in solution; that change may be wrought in the solvent by coming in contact with some foreign substance. Deposits on the teeth are incidents. Nonuse of the teeth is a factor in pyorrhœa. The first result is elongation, by a thickening process within the sockets. The disease is confined to periosteal structure. It is mainly a local affection, modified and aggravated by systemic conditions. Usually the teeth most used are the healthiest.

Dr. Rhein believed that the disease was the result of malnutrition; this may be caused by nonuse. It can be brought about by gout or by other diseases. The gouty diathesis is not necessary for the presence of uric acid.

Dr. Marshall thought that pyorrhœa was not the result of local causes, but a manifestation of systemic disease. Had seen pyorrhœa as the result of a displacement of the uterus.

Dr. Crawford said that deposits of all kinds upon the teeth are always the result of an issue, a wound, opening, or injury.

Dr. W. H. Morgan never met with deposits upon the apical third of a root without an opening from the margin. Calculus once formed is never absorbed. Nature has three methods of getting rid of foreign bodies.

Dr. Harlan said that no speaker had brought any evidence to show that deposits without openings were the result of gout or rheumatism, or that some previous injury had not been received. Without the formation of a nidus of some kind, or the presence of microörganisms, such deposits will not exist.

Dr. Bogue called attention to three causes of roughening of apical end of root; deposits, absorption, and result of marginal disease.

Dr. Pierce stated that every clinician for the past twenty-five years, declares that loosening and falling out of the teeth accompanies gout. When anti-gout treatment cures, he assumes the right to believe that gout is present. Diet and systemic treatment had cured bad cases, where local treatment had failed.

Sec. VII. Dr. Brophy, Chairman, after referring to papers from the various medical and dental journals, on the subjects of the section, detailed original operation for the resection of the inferior dental nerve. The operation consists in the introduction of a flexible drill into the canal at the mental foramen, from within the mouth, and the removal of all nerve tissue by means of broaches, which are similar in form and construction to Donaldson's canal cleansers. Opening to the canal is obtained by dissecting downward and deflecting the tissue backward. Under this section, a paper on "Planting Teeth," by Dr. W. N. Morrison, was read by his son. The chief points were, that while he formerly used fresh specimens, and now used dried ones, he preferred the fresh ones. He inquired why the odontoclasts attack roots which have been planted for from twelve to fifteen years. He also suggested that massage of the gums with the ball of the finger and warm water, increases the chances of success.

The meetings were rather spirited, considering the heat of the room in which they were held.

Many of the reports evidenced a lack of preparation and a lack of interest on the part of members of sections, which fault promises to be remedied somewhat at the next meeting.

OBITUARY.

Dr. Charles Henry, Jacksonville, Ill.

died august 23, 1894.

Dr. Henry was born August 20, 1835, in Woodstock, Conn., where his youth was spent. Attaining manhood he entered upon the study of dentistry, and was graduated from the Pennsylvania Dental College with the class of 1859-60. He located in Savannah, Ga., with an elder brother then in practice. After the close of the war, Dr. Henry settled in Ceder Rapids, Iowa, and while residing there was married to Martha M. Cole. Soon afterward he removed to Jacksonville, where he has been in active practice until his death.

Dr. Henry was a member of the Illinois State Dental Society continuously for about twenty-five years, and was well known to its members, often serving in some official capacity. Two of his sons, Charles C., and George, studied dentistry with their father, graduating from the Chicago College of Dental Surgery. Charles C. located with his father, and George, in Manitowoc, Wis. Two younger children are Mamie B., and Harry C.

Dr. Henry has been a useful practitioner to the community, courteous to fellow practitioners in his neighborhood, genial and sociable in gatherings of the dental profession, and a sturdy friend of professional progress. G. V. B.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

JUMPING THE BITE.*

A REPLY TO DR. TALBOT, DR. CASE, ET. AL.

BY R. OTTOLENGUI, M. D. S., NEW YORK.

It is always unfortunate when men discuss subjects which they do not thoroughly grasp, and if we may judge by the published opinions which have been credited to various prominent gentlemen during the last two years, the subject of "Jumping the Bite" is a terra incognita.

The beginning of the recent discussions dates back to May, 1892, when Dr. Talbot read a paper before the New York State Dental Society, in which he alluded to this operation.

Before I enter the discussion myself I shall explain exactly what the term "jumping the bite" means, but before expressing my own views I shall call your attention to what other men have understood the operation to be.

That Dr. Talbot himself was not absolutely clear upon the subject is easily shown. Before going to Albany to attend the meeting of 1892, I received an invitation to discuss Dr. Talbot's paper, and a "proof" copy of the same was sent to me. This showed that the matter was already in the hands of the *Cosmos* publishers, and in type. In that I found the following sentence: "As I understand the phrase it consists in throwing the lower jaw forward one-half the width of a bicuspid, thus bringing the lower incisors closer to the posterior surfaces of the upper incisors, and also causing the chin to become more prominent." This is not a bad definition if by "*posterior* surfaces of the upper incisors," we understand Dr. Talbot to mean the "*palatal* surfaces" thereof. Moreover this is the way that the sentence appears in the *Dental Cosmos*, and in the "Transactions of the State Society."

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*Read before the Central Dental Association of Northern New Jersey, September 17, 1894.

I attended the meeting, and as Dr. Talbot read his paper, I followed him with my eyes on his proof copy which I had taken with me. Imagine my surprise to hear him read the above sentence thus: "As I understand this phrase, it consists in throwing the lower jaw forward, *or backward*, etc." That I might be sure that my ears had not deceived me, I asked Dr. Talbot to allow me to see the paper which he had read, which also was a proof copy. He did so and I found the words "*or backward*" interpolated in lead pencil. Now why did Dr. Talbot make this change in his paper, and having done so, why did he alter it again before publication?

In spite of the fact that the words "or backward" do not appear in the reports of his essay, there is evidence in the printed "Transactions" that what I assert is true. In the report of the discussion, I am astonished at the inaccuracies, the unintelligible phrases, and much that is not mine, which the stenographer has attributed to me, but I do find the following: The essayist says: "As I understand it, it consists in throwing the lower jaw forward or backward the width of a bicuspid." And a little later, replying to that I am correctly reported to have said: "Jumping the bite means only one thing. It means the movement of the whole jaw so that it bites in a new position, and that new position must be *forward*, not *backward. There never was a bite jumped backward, and there never will be.*"

In the discussion which followed the reading of Dr. Talbot's paper, Dr. Farrar said: " * * there are two kinds of jumping the bite. When a central incisor rests inside of the lower arch, we place upon the lower teeth an inclined plane to set those teeth out. That is one kind of jumping the bite." But Dr. Farrar is mistaken. That is not jumping the bite at all.

In the neighborhood of twenty years ago, Dr. Kingsley exhibited a case of regulating before the Odontological Society. The models showed a protruding upper jaw before treatment, and a faultless occlusion after, and the time consumed had been only two weeks or thereabout. Because of the remarkably brief time required to correct so great a deformity the case attracted more than ordinary interest and curiosity. Dr. Wm. H. Atkinson asked: "How did you do it?" and without any previous thought upon the subject, but as we sometimes say, "on the spur of the moment," Dr. Kingsley replied, "I jumped the bite."

That was the first time that the term was ever used; it was used in connection with a definite operation performed under specified conditions, in a specified manner · the same operation under similar circumstances has been successfully undertaken by Dr. Kingsley hundreds of times since, and always spoken of by the same name. As he first thought of the operation, and as the name was original with him, I cannot see how the term "jumping the bite" can mean any more or any less to-day, than it did twenty years ago.

When Dr. Farrar corrects a malposition of the superior incisors, carrying them outward so that they bite over the lower incisors, he *changes* the bite but he does not *jump* the bite, for his operation is upon the *upper* jaw, whereas jumping the bite has to do with the *lower* jaw. And when Dr. Talbot moves a lower jaw backward, so that it bites half a tooth *behind* the original bite, if he ever did or ever will accomplish such an extraordinary thing, he will perform an entirely new operation, but he will not "jump the bite," for that phrase has a definite meaning which it has held unchanged for twenty years. I may therefore now define the true meaning of the words.

When a patient applies with a protrusion of the upper jaw, an examination of the occlusion often shows that the lower jaw is biting posterior to a normal or typical occlusion. This fact is not decided by an examination of the cuspid region, because the lower cuspid may bite behind its proper closure, merely because of the fact that the frontal portion of the upper jaw is protruded. But when it is seen that the bicuspids and molars of the lower jaw are biting back of the typical closure, it is an undoubted fact that the lower jaw, *the whole of it*, is in an abnormal pose. Except in some case of such rarity that it might be termed a freak of nature, such an occlusion is accompanied by an external asymmetry of the features which has to do with the lower half of the profile. Not only is the incisive region of the upper jaw protruding, but the chin retreats. If the dentist were to regulate by extracting two bicuspids from the upper jaw and then forcing the six anterior teeth of the upper jaw backward to an antagonism with the lower incisors, he could show a correction of irregularity in his plaster casts, but an examination of the patient would show that he had not altered the asymmetry of the face. He would have carried the anterior portion of the upper jaw back *beyond a normal pose,* and by compelling it to align with an abnormally retreating chin he would have produced a disfigurement quite as great as the one which he was asked to correct.

But if he were to have the patient move the lower jaw forward until in the molar and bicuspid region, at least relatively, the bite were typical, it would at once be seen that the retreat of the chin being altered, a cosmetic effect would ensue. If in addition to this the upper jaw could be shortened so that the incisors of both jaws would antagonize, a perfect result would be obtained, which would include external beauty and internal regularity.

To treat a case in this manner, *starting with a lower jaw which bites abnormally behind a typical bite,* and to move it forward to a proper closure, and retain it in its new pose until by a change of habit and accommodation of nature, the new relations of the jaws are made perpetual, is to "jump the bite."

To move one set of teeth over the other, by altering the position of the alveolar process which holds them, is not jumping the bite ; and to undertake to move a whole lower jaw forward, *when the bite in the molar and bicuspid region is normal,* might be so nominated if it were accomplished ; but it is not the operation contemplated by the originator of the phrase. Moreover I can scarcely imagine a case wherein such a procedure would be either advisable or proper. For it could not be done without moving the lower jaw forward into an abnormal pose, since the pose was correct at the beginning.

I wish to lay some stress upon this, because it may be that those who say that "jumping the bite" is impossible, or that they have failed, have not discriminated as to the proper cases in which to make the attempt. To simplify my meaning I might say, if the lower jaw is in proper position relatively to the molar region of the superior jaw, let it alone. Correction has to do with the upper jaw exclusively. But if the lower jaw is in an abnormal pose, back of the typical occlusion with the molars of the upper jaw, then, and then only, jump the bite. Correction can only be properly carried out by reducing the frontal prominence above, and compelling the lower jaw to assume the pose which Nature intended.

That being the dogma, the question arises, Can it be done? Dr. Talbot and a few others, who admit that they cannot do it, say that it is impossible.

I wish to quote Dr. Talbot a few times. In the paper at Albany he says:

"I have never been able to jump the bite, although I have tried it in a number of cases. I do not believe that any one else has been able to accomplish it, nor do I believe that such a thing is possible." In the July *Cosmos*, '92, the doctor imitates the pugilist of the day, by issuing a challenge to the world at large, Dr. Kingsley preferred. In this singular communication I find this odd sentence. "It will be observed that I make the statement, 'I have never been able to jump the bite' (by a forward or backward movement of the condyles in the glenoid cavity, the distance of the width of a bicuspid, and a new socket formed)." The latter part is in brackets and supposedly amplifies and explains Dr. Talbot's position. Observe that once more, this time we have it in print, he talks about *forward* or *backward*. Lastly, he is reported in the REVIEW as saying, "It is stated by some dentists that I claimed that jumping the bite cannot be done. That is wrong. I have done it perhaps three or four times in my practice —that is I have brought the lower teeth forward by what I claim is an absorption and deposition of the cells of the bone, and not by a forward movement of the jaw entirely."

If we read these lines carefully we see again, that Dr. Talbot has a rather cloudy idea of the meaning of the phrase, "jumping the bite." In one place he alludes to it properly, as a movement of the whole lower jaw, and says it is impossible; then he says he has jumped the bite, but explains that he moved the whole lower set of teeth, and not the jaw and chin.

Out of the fog of all that Dr. Talbot has said, I extract the fact that he considers it impossible to move the whole lower jaw, teeth, bone, chin and all, forward. He admits, however, that he has corrected an occlusion by such a forward movement, but claims that it was produced by a change in the alveolar process, which permitted the teeth to accommodate themselves to the desired occlusion, without altering the general relation of the jaws themselves.

Being entirely unenlightened (he does not say how he did it), as to Dr. Talbot's mode of accomplishing such a result, I am not prepared to say whether it is possible or not. Certainly I should not consider it a probably successful undertaking. But between the two claims, I am prepared to decide whether his notion is correct in relation to those cases which have passed through my hands.

Where we "jump the bite," we usually complete the correction of the upper jaw first. This done, a retaining fixture is made for the upper jaw, to which is attached an inclined plane which prevents the original malocclusion, and compels the jaw to shut forward assuming the pose which Nature intended. This done let us suppose, since Dr. Talbot admits after all that such a thing is possible, that in time the patient presents with a correct occlusion. The question to be determined is, Has the whole lower jaw assumed a more forward pose ? in which case Dr. Kingsley would be correct. Or has the fixture, by holding the teeth, compelled them to remain in proper antagonism, while the jaw itself has gradually slipped back to the old pose, this being accomplished, as Dr. Talbot says, "by absorption and deposition of the cells of the bone." If this were the case then Dr. Talbot would be correct.

As I have said before, I do not know what has occurred in those cases which Dr. Talbot has treated. He says that he has moved the teeth to a new occlusion, but not the jaw, and as he says so, I show him the courtesy of believing him, a courtesy which he does not invariably extend to others. But that anything of that kind has occurred either in Dr. Kingsley's practice or in mine, is not only not true, but I can demonstrate that with our apparatus it would be impossible.

In the first place, in "jumping the bite" in the true sense of the words, Dr. Talbot correctly says that we make the chin more prominent. Consequently, if the chin remains prominent then Dr. Talbot's idea that the operation is impossible, is entirely erroneous. That the chins of the patients for whom we have jumped the bite have remained prominent, I most positively state. But I will go further and demonstrate that no other result is possible with our method. I have said that an inclined plane on the plate in the roof of the mouth, catches the lower incisors and throws the jaw forward to form an occlusion. This plane impinges on the four incisors of the lower jaw. If the lower jaw persisted in assuming its original pose, to such an extent that absorption of the alveolus followed, the result would necessarily be that the jaw would go back to the old pose, *carrying with it undisturbed the molars, bicuspids and cuspids,* but the incisors, which rest on the inclined plane, *would be held in the forward position.* Thus we would *eventually* find the jaw occluding as originally, except that *the four lower incisors would be protruded forward, with spaces between them and the cuspids.*

This is no mere theory, as probable as it sounds. It is a fact plucked from the realm of experience. I once undertook a case of regulation for a young lady of twenty. At first I contemplated the movement of two upper centrals only. But as the work progressed it became evident that I needed to widen the arch, and when this had been accomplished, and the upper incisors carried out to a proper alignment, I found that my occlusion was all astray, notwithstanding the fact that the two jaws were now individually perfect. Then I noted that *the lower jaw was in malocclusion because of its posterior pose,* and I decided to jump the bite. The usual fixture was resorted to, but in a short time I found that the age of the patient was against the success of the instrument, and that, as I have said above, the lower incisors were being brought forward by my inclined plane. A new fixture was specially designed for the emergency, and the case was perfected successfully, in spite of the persistent tendency to go back to the old abnormal bite.

In the REVIEW Dr. Talbot is reported as saying: "The point that Dr. Kingsley makes is, that in what he calls jumping the bite, when the lower jaw is brought forward the width of a tooth, that a change takes place in the glenoid cavity, and a new socket is formed, etc." Dr. Kingsley has no recollection of saying any such thing, and it would be interesting for Dr. Talbot to tell us where he heard or read that statement. Dr. Kingsley does not say that a new socket is formed by a change in the glenoid cavity. He does not know what occurs there. Neither do I. Neither does Dr. Talbot, and theorizing is mere speculation, and as Dr. Newkirk says, "What difference does it make to the patient whether Dr. Talbot be correct or Dr. Kingsley be correct? If it can be done, it does not make any difference what changes take place."

Dr. Talbot tries to show theoretically that the movement is impossible, and this in the very face of the fact that the patients, every one of them without a single exception, *can voluntarily move the lower jaw to the desired pose,* and open and shut the mouth in the new relation without any instrument whatever. This shows instantly that regardless of Dr. Talbot's learned dissertations about the glenoid cavity, there is no *physiological* hindrance whatever to the *movement.* And it follows that as the patient *can* shut the mouth properly, the need is merely an instrument which will *compel* him to do so *often enough for a new habit to be formed.*

The one mistake, as it seems to me, which Dr. Talbot makes, is, that not entirely understanding what jumping the bite means, nor when, and when only, it should be undertaken, he argues from false premises. He takes a jaw of a *normal* type and bases arguments on that; or else he takes a *skull* and tries to prove something by that. I wish to answer both of these baseless arguments.

In the discussion at Albany Dr. Talbot asked the audience to move their lower jaws forward, until the incisors of both jaws shut *end on end.* You gentlemen may do the same now, that you may better follow the argument. Then he asked if every one of those who had done this could not pass a knife blade between his molars, from which he argued that by moving the jaw forward the occlusion was destroyed rather than perfected. As most of those present could carry the blade between their jaws, the little experiment was quite a theatrical effect, and convincing at the moment. The doctor was warmly applauded. But like many stage tricks, this is good only until it is exposed. We are often convinced of a thing by a simile which upon analysis is found to be no simile at all. So it is here. What occurs in the mouths of ordinary men, presumably normal, is no argument in connection with the abnormal. Come to the very proposition of Dr. Talbot. He says that you must move your lower jaw forward till the incisors of both jaws touch *end on end;* but, when we jump the bite, and move the lower jaw forward, *the incisors do not bite end on end.* The lower incisors bite *behind* the upper. Why? Because the lower jaw unlike those of normal mouths, bites *behind the typical closure,* and even when thrown forward it does not antagonize in the incisive region, *end on end.*

When Dr. Talbot makes his famous demonstration with a skull (I say famous, because not satisfied with the answers given to him in Albany, he is reported to have carried his dead bones to the World's Fair), he places the naked end of the condyle, into the naked socket and then proves (sic?) that it is impossible to jump the bite. Two propositions confront him. First, in practice we do not deal with dead men. Our patients do not antagonize the end of the condyle with the bottom of the glenoid cavity, but they come to us with these bones separated by synovial membrane and cartilage, so that in some instances, as may be seen by dissecting the cadaver, the glenoid cavity is so filled that it is almost flush. But the second and most important point is, that the bones shown by Dr. Talbot, *probably did not come from a person who needed to have his bite jumped*, and we are dealing only with those who do need it. A favorite phrase of Dr. Talbot's is "arrest of development," and in accounting for these malpositions he offers as a possible explanation that the lower jaw has been arrested in its development. If so does it follow necessarily that there has also been an arrest of development in the glenoid cavity? I grant that it is possible, but is it positive? When we theorize about abnormalities, have we a right to decide by facts which are true only of normal conditions? Granting for a moment (and only for a moment) that there has been an arrest of development in the lower jaw, is it not possible that the glenoid cavity is normal? If so it becomes a physical possibility at once, for the jaw to assume a normal pose, without any necessity for an enlargement, or change of the glenoid cavity. And as it is true, that in all these cases the patients can at will make the normal closure, while it is merely by habit that the abnormal bite is assumed, we see that there may be something in the hypothesis, as absurd as it may seem at a first glance. However I wish to be distinctly understood. I do not claim either that there is an arrest of development in the lower jaw, or that there is no arrest of development in the glenoid cavity. I do not know anything about it, but there is some comfort in the thought that neither does Dr. Talbot. He speculates and I prefer not to do that. All that I claim is that which I know, that,

1. Patients present with a lower jaw biting posterior to the normal pose.

2. These patients can voluntarily move their lower jaw to a normal occlusion and pose.

3. We can compel them to do habitually and permanently, what they can do voluntarily.

4. This is jumping the bite.

In the May number of the DENTAL REVIEW appeared an article from the able pen of Dr. Calvin S. Case, which treats of this same subject. At the outset he quotes from Dr. Kingsley, making this excerpt from a description of a case in practice. The extract begins:

"A flange was built on this plate behind the incisors to jump the bite. This plate is shown in figure 22."

Of this sentence Dr. Case makes the following comment:

"In passing I call your attention to his (Dr. Kingsley's) offhand method of describing an operation that has no recorded legitimacy up to this date, and one too, which few would feel justified in attempting. He apparently brushes it aside with a few words as too common and too simple to be worthy of a fuller description, etc."

One is surprised that Dr. Case, a gentleman of scholarly attainments, holding a professorship in an important college, and teaching hundreds of students, should have written the above paragraph. For when he says that jumping the bite had no recorded legitimacy up to the date of Dr. Kingsley's article from which he quotes, he seems to show that he is ignorant of the first, and for many years the only text-book of any importance relating to the subject of irregularities. In Dr. Kingley's Oral Deformities, published in 1880, the operation is amply described. On page 84 thereof is an illustration which is so excellent that it tells the whole story without words. The only difference between this, and the plate illustrated in the *Cosmos*, to which Dr. Case alludes, is that the former was made to jump the bite coincidently with the reduction of the frontal prominence of the upper jaw, whereas latterly it has seemed best to jump the bite after the correction of the upper jaw, and the flange for effecting this is added to the retaining plate.

Dr. Case says that Dr. Kingsley brushed the matter aside as too simple to require fuller explanation. Well, that is true. In the first place, jumping the bite was not under discussion in the paper quoted, and was merely alluded to as an incidental necessity in correcting the case described. Secondly, it *is* so simple, and was described so long ago, that it certainly did not seem necessary to describe the method again. Indeed the operation is so simple, and the instrument is so easily made and applied, that it is amazing that such skillful men as our Western *confreres* have failed either to succeed with it, or even to understand it. Can it be possible that these gentlemen are not so skillful as we have supposed?

Dr. Case then quotes extensively from Dr. Kingsley the description of a case attempted in a lady of eighteen, which proved more than ordinarily difficult, so that a skull cap was made to be worn chiefly at night, with a band under the chin to overcome a tendency to open the mouth.

Of this Dr. Case says that one may tie a handkerchief tightly over the head and around the chin, and that he can still open his mouth, and that after carrying the jaw in the forward position for a few hours he would be likely to return it to the original.

One may theorize till the cows come home, and Dr. Case and all the dentists in Chicago may tie their heads up with handkerchiefs, and then move their jaws forward, and *backward* (with or without words), yet the fact remains that in the case described, with the apparatus which was not a handkerchief (another simile gone wrong), the result was a success, because *the young woman did not unlock her jaw and move it back.* With Dr. Case's tied up subjects, he has a lot of men whose *volition* at Dr. Case's command, is to unlock the jaws and move them back, whereas this young woman's volition was to keep her jaws in the desired position that her beauty, and incidentally her chances in the matrimonial market might be enhanced.

The instrument around the head and chin, with a strong elastic band connecting the two parts, was chiefly worn at night, when by the absence of voluntary act, the jaws might get tired and drop; but any sensible person must see that during sleep it would not require very great pressure to overcome this tendency, and certainly during sleep the patient would not intentionally strain her jaws apart, stretching an elastic, and then, unlocking her jaw from the flange, move it back. Moreover here again we see how entirely impossible it is for the western mind to understand the simple necessities of these cases If there were no band around the chin at all, the girl could not carry the jaw back to the original bite, because if she attempted to do so, the flange would prevent the closure of the mouth. The apparatus around the chin was to overcome a tendency to keep the mouth open, not a tendency to return to the abnormal occlusion. Now, however *possible* it might have been to open the mouth, it is manifest that she *would not do so*, especially during sleep, stretching the elastic in the act, and thus placing her chin in a position of resistance. If she did so she would soon be so tired, that it would be absolutely necessary to close the jaw again, *and as she could not close it in the old way, she would be obliged to close it in the new.* To Dr. Case then I have only to say, that the question is not whether the thing could be done, because it was done ; it is merely a question of comprehension, a quality of the mind which the writer of an article cannot supply to all of his readers.

Dr. Case goes on to say that he doubts that people would have sufficient will power to resist the demand of nature to find ease and rest under these circumstances. I have shown that the patient under discussion could find the greatest ease and rest by closing the jaw as we desired. In fact that is the whole theory. However comfortless the new pose is, the fixture in the mouth makes that pose the most comfortable possible. But on the subject of will power I have something to say.

What will the skeptics in the west say when I assert that I have jumped the bite without any apparatus at all? Yet that is just what I have done. A case passed through our hands which was so extreme that after the extraction of two bicuspids and the reduction of the frontal prominence to such an extent that the spaces were entirely obliterated, the upper jaw still appeared to be prominent. I say appeared to be, because truly it was not. The lower jaw was in an abnormal pose, retreating behind the proper closure. I decided to jump the bite. It was nearing the vacation season and it was desirable that the child should wear a retainer for a time, which should be cemented to the upper teeth. This made it difficult, though it would not have been impossible to attach the incline plane. However, as I knew that I could compel the jump of the bite in the autumn, I decided to jump the bite if possible without any apparatus. I merely explained to the little Miss what was required, showed her her profile in a triplicate mirror, calling her attention to the greater beauty in the new pose, and the seed was sown. I depended upon nothing but volition and self interest to do what all the western experts say is impossible. Four months later she reported with a perfect occlusion, and with a perfected profile. Not only was the jaw biting in the new place, but it was impossible for it to bite elsewhere. This is easily explainable. It often happens that when the bite is jumped, at the outset the bite is not a perfect antagonism, the jaws being slightly apart in the bicuspid region. This is due to two circumstances; first, because in many of these cases the lower incisors present, elevated above their neighbors; and secondly, because the lower bicuspids, and perhaps also the upper, have not fully developed. The pressure of antagonism of the lower incisors against the flange of the plate drives them down into their sockets, shortening and allowing a closer closure of the jaws, and time sees the advancement of the erupting teeth, the tendency of nature here, as always, being toward a perfect occlusion. When this is completed the jaws will close in the desired pose so readily that no other will be attempted.

When I began I intended to reply to several other errors in Dr. Case's paper, but I have already written enough, though I will cheerfully write again if Dr. Case desires me to do so. I have, in closing, only one more allusion to make. Although Dr. Case has said as I have quoted that "few would attempt this doubtful operation," in the July number of the REVIEW, he describes a case from his practice in which, despite the fact that the chin retreated, he left it as it was; correcting the upper jaw by forcing it back, which in my opinion was bad practice, as I have elsewhere stated. It was bad practice in Dr. Case's opinion also, because he says he could have done better by shortening the lower incisors, elevating the bicuspids, and jumping the bite, which is just what I have described above as a common occurrence with us. So now we must consider that Dr. Case is an exceptional operator, for he tells us that he will attempt what he says few would undertake. He is going to try to jump the bite, in spite of his own arguments against it, or rather against our success at it, and in spite of the fact that he is in the same city with Dr. Talbot. By the way, if Dr. Case succeeds I think Dr. Talbot would owe him one hundred dollars, for his open challenge has never been withdrawn.

Dr. Case says "In the discussion at the congress I said that I doubted if this were possible. I now have in mind a partially developed scheme which I believe will fill the requirement." "When I have accomplished everything possible in the regulation of the teeth and alveolus,I shall then attach my appliance for jumping the bite to be worn constantly for a year or more."

Think of that! Isn't it just splendid? Dr. Talbot says it is impossible, but Dr. Case is not afraid of that. He sees a way to success. A way only partially developed as yet, but undoubtedly he will succeed. Then with this new invention, Dr. Case will "jump the bite" of some poor unfortunate who submits to an experiment of an impossible character, (vide Talbot). But he will succeed. He will jump the bite. I have no doubt of that. The new apparatus will accomplish it, and an illustration thereof will decorate the page of a leading journal, and Dr. Talbot's hundred dollars will buy a gold medal to decorate the lapel of Doctor—excuse me—Professor Case's coat. And there you are. Jumping the bite will be recognized as an operation of "recorded authenticity," and the boundless West gets the credit. Anything to beat New York. Poor Doctor Kingsley. His connection with the affair will sink into oblivion. Isn't it funny!

THE TREATMENT AND FILLING OF PULPLESS TEETH AS LEARNED FROM PAPERS READ AT THE WORLD'S DENTAL CONGRESS, A. D. 1893.*

BY J. D. BANES, D. D. S., CHICAGO, ILL.

Mr. President and Gentlemen:

The object of this paper is to bring before this society for discussion, the methods of treating and filling pulpless teeth, which were presented in papers, or exhibited in clinics at the World's Dental Congress, of 1893.

Upon the second day of the Session Dr. J. H. Woolley prepared and filled the roots of a superior second molar for a crown. The tooth was decayed very high up, so that the pulp chamber was fully open and all the canals accessible. Dr. Woolley cleaned out the canals with his broaches. He then volatilized alcohol in them by means of a Small's canal dryer. He then thoroughly dried the tooth with Richmond's hot air dryer, and tested the dryness of the canals by inserting the probe of a root canal dryer of his own design, with which you are probably familiar. Next he pumped eucalyptol into the canal, and volatilized it with hot air, so as to drive it to the end of the tubuli, or fill them with vapor. Finally he flooded the canals with eucalyptol, the pulp chamber with chloroform and inserted some cones. After driving off the chloroform by hot air he dismissed the patient.

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*Read before the Odontographic Society, May. 1894.

The trouble with that kind of a filling is that there is too much liquid used. I question whether the eucalyptol passed to the apical foramen, and I do not believe that the gutta-percha upon which we must depend to stop those passages permanently, passed so far. When the cone reached the small portion of the canal it would act as a piston and drive the liquid through the foramen producing pain, the operator concluding therefrom that his filling was complete; but we think in time, and in a short time at that, the eucalyptol will diffuse away leaving the apical portion of the canal above the cone unfilled.

On the third day Dr. W. H. Richards exhibited his method of filling tortuous canals with a metallic fiber. He cleaned out the canal and moistened the walls with oil of cassia, pumping it in with a broach. He picked up the metallic fiber on the moistened broach and passed it into the canal, working it up until by the sense of touch he determined that it had reached the apical foramen.

This method seems to me to be open to many and very serious objections. First, I do not believe any man can be sure when he has reached the apex with his metallic fiber. In ninety-nine cases he will force it through the foramen, or stop before reaching it, to one where the fiber would just pass to the foramen and stop there. Second, the fiber does not fill the canal and the tooth is left only a little better off than it would be if the canal were entirely empty. Third, if you can get a probe into a canal you can file a gold wire as fine or finer than the probe and after pumping in the chloro-percha you can drive in your gold wire. The chloro-percha will fill in around the wire and you thus have a more perfect filling than is afforded by a loose metallic fiber in the canal. Still further if you can pass a probe part way into a canal, with patient effort you can fill that canal to the end with solid Hill's stopping.

In the discussion of the question "Can apical pericementitis result about a root that has been thoroughly sterilized and filled?" some valuable points were brought out. Dr. Fernandez said that he hoped the time would come when arsenic would no longer be used to devitalize the pulps of teeth. He dwelt upon the fact that we are using a very strong and uncontrollable poison, that we do not know how far its energy extends, or exactly how it acts in devitalizing the organ. He advocated some mechanical method, giving gas if necessary to avoid the pain. If obliged to use arsenic he would use only enough to devitalize the body of the pulp and desiccate the rest with tannin and glycerine or tannic acid in glycerol. If he could not then remove all of the tissue he would digest it in pepsin and wash it out. Dr. Fernandez said he thought a large number of cases of pericementitis were caused by the action of the arsenic or the poisonous medicaments used in the destruction of pulps.

Dr. I. P. Wilson pointed out the way in which the arsenic probably causes the pericementitis. If you will notice a longitudinal section of a tooth you will see a small portion at the apex of the root that is entirely composed of cementum; this small portion of cementum is undoubtedly nourished by blood vessels from the pulp, and if the pulp is devitalized by the arsenic beyond this point its nourishment is cut off. It then acts as a source of irritation, causing that permanent uneasy feeling at the end of the tooth. That portion of the tooth is prone to become necrosed after the death of the pulp as is shown by the number of cases of chronic abscesses, which cure up nicely after drilling in and cutting off the end of the root.

During the same discussion, Dr. A. O. Rawls, of Lexington, Ky., said that to protect the teeth perfectly it was necessary to fill the canals to the end, and also the tubuli of the dentine to their extremities. In order to do this he advocated drying the entire tooth from crown to apex with hot air. Then applying some ethereal solution as a varnish, that will fly like a flash to the farthest extremity of the tubuli.

I would want to try a good many experiments with teeth in plaster and wet plaster, so that I could test the method by microscopical examination, before adopting the method in the mouth.

On the fourth day of the session, the paper of Dr. Poinsot, of Paris, France, upon the subject of the "Extraction of the pulps of teeth in a calcified state by trepanning," was read by the chairman of Section IV. The Doctor claims that physiology teaches us that the teeth receive their nourishment from two different sources, viz: the external, and the internal; the external life of the teeth through the peridental ligament, and internal through the pulp, the function of which consists in securing the calcification of the organ in the internal part of the periphery, diminishing the pulp chamber in a progressive way. Calcification is generally complete at the age of thirty-five or forty years, and no matter what the cause may be, either local or general, when once calcification is complete he considers it advantageous to perform the operation of trepanning, which he accomplishes by drilling through the axis of the central pulp chamber, using a small drill for single rooted teeth, and a large drill for teeth with more than one root, carefully removing the enamel at the spot where the drill acts, by the use of drills made from small diamond chips. The way to extract the dental pulp with muscular fillet attached, is by the use of a nerve broach, which is used after obtunding the tissues with cocaine phenate, or if root canal is mechanically inaccessible, by the use of electro-cautery. Finally by filling the canals and remainder of cavity in the usual way. He suggests two ways of indicating when calcification is complete. First, when the gum following the peridental ligament, surrounds and enclasps the crown of the tooth. And second, by a careful examination by means of an electric light.

The Doctor's patients have the sympathy of the author of this paper at least, if not of my auditors, inasmuch as his ideas as set forth in the paper presented, necessitate the wholesale slaughter of pulps without any exception so soon as the calcification is complete—which is claimed to be from thirty-five to forty years—in order to preserve their usefulness and longevity. Such a method of treatment may possibly be excusable in Paris, but for the sake of humanity keep the Doctor and his trepanning on the other side of the water.

The first of the two papers on the treatment of root canals was that sent by Dr. Miller, of Berlin, Germany. It was read in the general session of the third day. The paper reports his experiments with methods to avoid the removal of dead pulps from the canals of bicuspids and molars. The method is one of mummification. The object sought is to find some substance with which to impregnate the remaining portion of the pulp, so that it will not decompose in the future. He points out seven characteristics or qualities, which are briefly:

1. It must be a strong antiseptic.
2. It must be soluble and diffusible.

3. It must not be too soluble and diffusible.
4. Coagulating action is desirable.
5. It must not be irritating to the pericementum.
6. It must not discolor the tooth.
7. Solids are better than liquids.

The only substance that I know of that meets all these conditions is gutta-percha in a clean, aseptic canal.

The first method used by Dr. Miller was to remove the body of the pulp after completely devitalizing it by the application of a small tablet containing

Sublimate (Hy. Clo.)	0.01	gram.
Boracic acid	0.02	"

Or,

Sublimate	0.01	gram.
Sodium chloride	0.02	"

The tablets were applied, crushed slightly and moistened, then covered with a layer of gold foil and the cavity filled. But in about 30 per cent of the cases this method caused violent pain because of the rapid diffusion. The painfulness resulting from the use of the first compound led to the use of

Sublimate	0.0075	gram.
Thymol	0.0075	"

The thymol was used to prevent the too rapid diffusion of the sublimate. He also used

Sublimate	0.005	gram.
Thymol	0.005	"
Tannin	0.005	"

But the tannin discolors the tooth. He also used the cyanide and the salicylate of mercury, but expressed himself as having achieved the best results from using diaphtherin (oxychinaseptol) a new antiseptic recently introduced by Emmerich. The Doctor reports that in over two hundred cases at the University of Berlin, where this method had been used, only one failure had come to his knowledge which we are constrained to admit is a good record if he in fact heard of all that failed.

As Dr. Miller observes, such a method can only be fairly tested by time and in any case should be used very seldom and only in teeth that would otherwise be treated by the forceps.

I think we had all looked for a valuable paper from Dr. Miller, but I must confess I was very much disappointed in it. I think that as with the mastery of geometrical science, no royal road to an easy solution of the most difficult problems, has yet been blazed out for the student's guidance, so with root filling in dentistry, no absolutely perfect and easy method capable of universal application has yet been discovered.

And as Dr. Miller admits the present method of filling the anterior teeth is not likely to be improved upon, and can be trusted to give success in a respectable number of cases, is it not fair then to say that the greater number of failures in filling the molars and bicuspids are due to the carelessness or impatience of the operator? In my opinion two things are absolutely necessary in the treatment of a root canal. First, it must be aseptic. Second, it must be sealed at the apex and the pulp chamber. I believe it would make little difference if the canals were absolutely empty if the apical foramen and the crown cavity were positively sealed. But to seal the foramen all the rest of the canal must be filled. Dr. Miller's method does not provide the second condition, and so long as the apical foramina are open so as to make the canals receptacles for serum, trouble is sure to follow sooner or later. I think for myself I would sooner extract a tooth than to make such an operation simply to save time and expense. If the tooth could be temporarily saved by this method it would surely be save longer by a careful filling.

In the discussion of this paper Dr. Frank Abbott, of New York, brought out his method of filling root canals. In the first place he said that he very seldom used arsenic to devitalize a tooth pulp, and when he did so it was only to relieve pain.

When a tooth comes to him for treatment, with the remains of a dead pulp in it, he opens into the pulp chamber so that he can have easy access to the canals. He then uses a one in ten thousand solution of the bichloride of mercury (one grain to twenty ounces), syringing out all the canals as thoroughly as possible. With a broach he probes into the canals so as to stir up the contents, and syringes again, repeating the process until the canals are clean, and the solution in coming out will not stain a white napkin. When he has thoroughly washed it out he fills it with oxychloride of zinc, to which he adds one drop of a one in two thousand bichloride solution. He said this is the material that mummifies or holds the substance which remains in the root of the tooth in such a condition as to give no trouble. He cleans out the canals and fills at the same sitting, before dismissing the patient, painting over the gum with aconite and iodine, as a counterirritant.

The paper on this subject which has created the greatest amount of interest was that presented by Dr. Emil Schreier, of Vienna. He has given us a positively new method for removing dead and putrescent pulps, and all operators are interested in it because the value of such a new method can only be tested by a large anount of clinical experience.

I presume you are all familiar with his method. He prepares a mixture of metallic sodium and potassium (about two parts sodium and one part potassium) of such a consistency that when a platinum broach is plunged into it, through the parafine coating, a film of the alloy will adhere and be carried on the broach, and the broach thus laden is passed into the moist canal. The metal decomposes the watery contents, liberating the hydrogen and forming the hydroides of the metals (caustic potash and caustic soda), which in the nascent state actively decompose the organic matter of the pulp, saponifying it (if that is a proper term to apply, as there is little or no fat in the tissue). At any rate the tissue is actively decomposed and rendered soluble, so that it is readily washed out with water.

The substance destroys the germs present partly by the heat evolved and partly by the chemical products. Of course this method is only applied with the rubber dam in position to protect adjacent tissues.

The questions which arise in connection with this method, some of which were suggested by Dr. Schreier, are:

1. Is there danger of forcing septic matter through the apical foramen, when the broach is first plunged into the canal?
2. Is the heat evolved too great?
3. Is there danger of an explosion?
4. Is there danger that the substances formed will pass through the foramen and set up irritation of the peridental membrane?

The latter is far the greatest danger. I would be very much afraid that in case of an open foramen, some of the caustic substance might get into the apical space, and if it should, trouble would doubtless manifest itself.

In connection with Dr. Schreier's paper I have consulted some fifteen dentists in good practice, regarding the Doctor's method, and found only two of that number who have ventured its use since congress adjourned, and one of the gentlemen was very much gratified with the results, whilst the other's experience was quite the reverse.

I have since been advised that other gentlemen present have used this method in their practice, before the meeting of the World's Dental Congress last year, and some of them with much satisfaction, and we should certainly be pleased to hear from any such parties.

Through the courtesy of Mr. Fred Noyes, I am enabled in this connection to submit the following letter from Prof. Noyes of the Rose Polytechnic Institute, of Terre Haute, Ind., a prominent chemist in our sister State, regarding the chemical action of the compound used by Dr. Schreier. Prof. Noyes' letter is as follows :

"I do not see how anything could be gained by the use of metallic sodium and potassium in the manner you indicate, which would not be gained equally as well by the use of sodium hydroxide, or potassium hydroxide, and with far less danger. The metals I should think likely to lead to ugly accidents in such a use. The hydroxides would I think have little effect on bony tissue, fats would be saponified, and other organic matter in general would be disintegrated by them."

We had hoped to have access to the official publication of the entire transactions of the congress, but owing to delays of various kinds it has not yet been published.

A FEW SUGGESTIONS RELATIVE TO CERVICAL MARGINS.*

BY DR. T. W. PRICHETT, WHITEHALL, ILL.

In a recent letter to Dr. W. A. Johnston, I believe I made the declaration "that I now regarded the cervical margin as the safest line against recurrence of decay of any portion of the cavity margin."

His reply thereto seemed to imply that I had made this declaration in a moment of great enthusiasm ; and further that he would like some proof in support of the proposition.

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*Read before the First District Dental Society, Peoria, Ill., September 11, 1894.

Very well. We will consider cases of proximate cavities in bicuspids and molars, not too far advanced in decay to preclude the safe shaping of cavities for the retention of fillings.

What is the cervical margin ? Having no reference at hand, I may construct a definition, and say that it is that portion of the cavity extending one-third crownwise from the gum.

Now let us suggest how such cavities should be prepared. To save entering into lengthy detail would say—follow the plans of Black and Cushing, which plans should be as familiar to every Illinois dentist as Holy Writ.

The distinguishing features of their method, as I interpret, is in reference to the form of the cavity for retention of the filling, and ample extension of the cavity for the prevention of recurrence of decay.

These are the two main items in this class of cavities to secure duration of fillings. Other factors belong to the method, as contour and contact, triangular form of the interproximate space, secured usually by some sort of wedging or pressure ; and the adaptation of the filling material to the restoration of form.

Now let us particularize a little. To prepare a cavity always cut until you come to something *good* at the cervical margin, even if it should be necessary to cut all the enamel away at the cervix. Cut wide bucco-lingually, extending to the angles of the cusps and including them if thin or of poor texture.

The cusp angles are not of much importance in supporting the filling by this method of anchorage, and should be cut away until the strongest possible border can be secured, and restoration be made with the filling.

Permit me to say in passing that I have observed more failures (recurrences) at this point (cusp angles) than at any other point along the line.

This is due largely, as I think, to the former practice of leaving these angles intact, with the view of giving some support to the filling, which view I now believe to be a fallacy. When but a small amount of dentine is left it is entirely inadequate to sustain the easily cleaved enamel under the wear and tear of mastication.

I would further point out that the achorage forms recommended by these men, give better access to the cavity margins and all parts of the cavity likewise, than the older forms.

An outward bevel all round the cavity margin (not too great) and the cavity is ready for the filling.

We go to our meetings, and as we meet elsewhere, we talk and talk about how to prepare cavities and introduce fillings to make them last. Now what more is there to it than the putting of all the material you can into a good clean hole?

However simple the general principles may seem, experience teaches many that there is a wide difference as to who cleans the hole and puts in the material—whether the results are to be permanent or temporary, comfortable or painful, heaven-like or its antithesis—whether by the master or the apprentice, the accomplished operator or the bungler.

The cervical margin! Place your filling material evenly and firmly upon all margins and surfaces alike, maintain as uniform density as possible through the whole mass of the filling. Restore the lost form of the tooth caused by decay and excavation, finish, collect fee—benediction—the cervical margin should now be able to take care of itself.

Let me observe that the signs of the times indicate that amalgam is to take rank as a permanent filling material, both for rich and poor, and as I think, upon its merits in resisting decay, easier form-building in general, and particularly for its adaptability to the cervical margin.

A CASE OF BRIDGEWORK.

BY A. E. MATTESON, D. D. S., CHICAGO, ILL.

A recent case in practice presented the following characteristics: The patient had lost the four lower incisors and had been wearing a plate which failed to give entire satisfaction. The occlusion was such that the lower cuspids had been forced inward and toward each other, until there was three-sixteenths of an inch less space at the cutting edge than at the gingival margin; thus leaving only enough room to insert three teeth. The remaining teeth were very firmly fixed, although considerable recession of the gum had taken place around the cuspids.

A bridge was considered the best means of remedying the difficulty, and the article of Dr. Rhein in the February *Cosmos* suggested the device which was executed as follows: An accurate plaster impression was taken, in three sections, and the impression of the teeth posterior to the cuspids filled in with mouldine and a cast made of Melotte's metal. Patterns of number sixty tin foil were made, covering the cuspids and extending slightly below the gingival margin. The labial surfaces, with the exception of about three-sixteenths of an inch at the gingival margin, were cut out. Each pattern was made one-fourth of an inch longer than the circumference of the tooth and pinched together where the joint was made on the mesial surface, thus forming a portion of the backing of the artificial laterals, as shown in Figure 1.

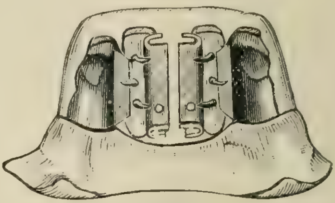


FIGURE 1.

In cutting the patterns, all lapping or excess of foil was cut out and the edges brought in close contact. The patterns were flattened out carefully, avoiding stretching in any direction. Duplicates of these patterns were cut from gold and platinum plate No. 30 B. and S. gauge, which after thoroughly annealing, were burnished to the cuspids the same as the patterns had been, and the "cut edges'' and "pinched ends" soldered with twenty-three and one-half carat solder.

Plain plate teeth with three pins were selected, ground and

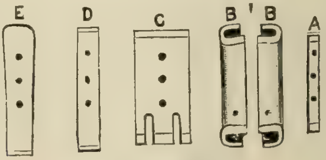
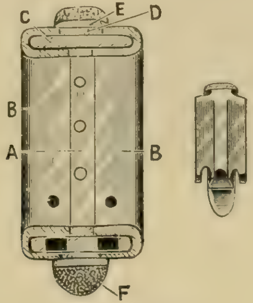


FIGURE 2.

backed with platinum No. 35 gauge. These teeth were then placed in proper position on the model, their lingual surfaces waxed together, and the labial surfaces including the cuspids, after oiling, were invested in plaster. The tongue No. 21 gauge, grooves No. 26 gauge, relief strip No. 26 gauge, and flush strip No. 21 gauge, (see Figure 2), were then constructed of twenty carat platinized gold. After removing the central incisor with its platinum backing *E*, holes were drilled to receive the pins in the tooth, and the different parts assembled, as shown in Figure 3 (enlarged), and in Figure 4, completed.

Holes were also drilled through *B* and *C* to receive stop pins, and the slots cut out from *C*. These were to prevent the central incisor from sliding down upon the gum when in position upon the natural teeth. The grooves *BB* were removed and the central incisor backing *E*, relief slip *D*, tongue *C*, and flush strip *A*, invested in equal parts of plaster and sifted hard coal ashes, and united with twenty carat solder. The central incisor as seen in Figure 3 with the grooves *BB* in position were again placed upon the cast and held by the same plaster investment, the pins of the lateral incisors bent over the grooves *BB* and lap of the cuspid bands, as shown in Figure 1.



FIGURES 3 AND 4.

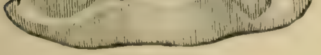


FIGURE 5.

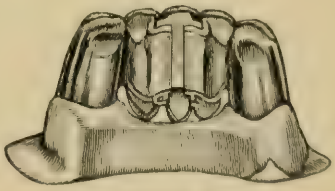


FIGURE 6.

Wax was again placed on the back to hold the laterals and grooves in place. The cuspid bands, with the laterals and grooves *BB* were removed from the metal model, invested in plaster and sifted ashes and united with twenty carat solder. The lateral incisors were built up in contour. After cementing the denture in, a hole was drilled through *BC* midway between the central and lateral. This was tapped and a screw cut gold wire inserted and cut off to prevent the central from slipping up.

Figures 5 and 6 represent an anterior and posterior view of the case while Figure 7 shows it as it appears in the mouth. From beginning to end each step of the work was so carefully carried out that when placed in the mouth, no grinding, or change of any sort upon the natural teeth was necessary.

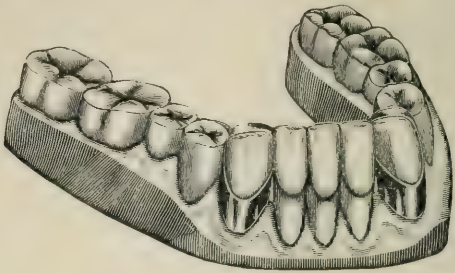


FIGURE 7.

WHAT MATTERS OF IMPORTANCE DO GOOD OPERATORS MOST FREQUENTLY NEGLECT OR OVERLOOK?*

BY DR. GARRETT NEWKIRK, M. D., CHICAGO, ILL.

It is little you may expect to know beforehand about a paper by reading its title. I have learned that it is the custom with many ministers to first write a sermon and afterward select the text.

Josh Billings was once advertised in my town to deliver a lecture on "Milk." The only allusion he made to the lacteal fluid was that "the best article he had ever seen on the subject was *cream*." He then discoursed variously on "*snaix*," "*mules*," "*rabbits*" and "*spellin' skules*," which latter he said he had no use for, believing as he did they were "simply gotten up to amooz ignerent folks."

At first, in a burst of poetic effusiveness, I had thought to name my paper "*An Essay on Spring*," but later I decided on a title which should give at least an indication of some of the things which might be said, and one, too, which should be extensive enough to give me all needful latitude and longitude. The fact is, that for several years I have been given only short notice for the preparation of any paper to be read before this society. Whenever the Program Committee or the Secretary have been long on promises and short on papers—"up a stump," so to speak, for the next meeting—they have called on me to fill time and start a discussion. They say, "*You can* do it; you can give us something to help us out." I don't know whether this is really complimentary to me or not, though I truly believe in the goodness of their intentions and the kindness of their hearts. But I do know that I have never written a paper without considerable time and study, which I counted worth much. It is a rule generally true, I believe, that the value of anything, whether it be wheat, silver, lumber, cloth, dental operations, or dental papers—the value, I say, is pretty nearly measured by the amount of honest labor that has been put into them. If any man writes a paper which commands wide attention, and is possibly translated into a foreign language, you may be sure it has cost him much time and pains, and probably not a little of anxiety as to matter, form and mode of presentation.

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* Read before the Chicago Dental Society, June 5, 1894.

Under the circumstances, therefore, you will not expect much from me to-night, for I shall only attempt the presentation of a few things in operative dentistry which may point the way for discussion.

It is easy to talk of failures, for they are plentiful enough. If all the failures ever made in the world were brought together they would make a mighty mountain, in whose shadow, as a little hill, success might sit.

Without further digression, I will say:

First. That one of the things oftenest overlooked by the generally good operator is the thorough cleaning of the teeth. In fact, I believe it is an exception rather than the rule that this is done religiously as an essential part of the process of "putting a mouth in order." We see mouths frequently wherein have been placed elegant gold fillings—possibly artistic bridges or a nicely adjusted plate, where the remaining teeth have never been thoroughly cleaned. The patient will tell you probably that the tartar has been removed again and again, but you are able to find plenty of scales within and above the gum margin, which you know well enough have been forming there for years. The condition of the gums, with their flabby and swollen festoons, is sufficient to demonstrate its presence at a glance.

Why should it be necessary forever to reiterate that the very first duty of the dentist in putting a mouth into a wholesome condition is not to fill cavities or make plates or bridges, but to *clean* the teeth—absolutely clean them? I have never yet heard described a systematic method of doing this operation, except this by a celebrated operator, who said, "Clean one tooth at a time."

This is *one* way, but as it seems to me not the most practical. With me it takes usually several instruments to reach and clean all the surfaces of any given tooth. Suppose that it takes on an average, three instruments. In proceeding from tooth to tooth, cleaning one at a time, would mean the taking up and putting down of instruments three times for each. The cleaning of thirty teeth, therefore, would involve changing instruments ninety times.

The better way as it seems to me, is to take a given instrument adapted to a certain part of the work, and with it go from tooth to tooth doing everything which may be done with *that* instrument; then follow with others having different adaptations in similar manner, so that when three or four have passed through the hand the tartar will have been pretty thoroughly removed from all the teeth.

In ordinary cases the work may be done with but few instruments, but it is necessary to have quite a variety on hand to meet exceptional conditions. Corresponding teeth in different mouths may stand at such varying angles that the same instruments cannot be used at all.

Perhaps some of the fault to be found with operators may be ascribed to their want of suitable instruments to meet the varying requirements. I know of no one "set" of scalers now on the market, which meets the long felt (or unfelt) want. My experience is that I need some from several different sets, and still I must make others for myself.

Another thing which I consider of importance is the special cleansing of the teeth enclosed by the rubber dam for operations of treatment or filling. This is, I think, almost universally neglected. In my judgment, as a rule with but few exceptions, no dental pulp should be exposed, or canals treated, neither should a cavity be prepared and filling inserted without this necessary step.

After one has done this a few times and observed the difference in the appearance of the teeth he will be fully impressed with its importance.

The surfaces of the teeth are usually covered with an adherent film which the rubber in passing over does not remove. A firm pledget of cotton or bit of hard spunk, held by stiff pliers, wet with alcohol and dipped in pumice, is a good combination for use on free surfaces. Floss silk (wrapped with a few shreds of cotton where space will permit) and pumice may be used on interproximate surfaces.

I may say incidentally that this method is also indispensable with me in preparing a tooth to receive a band for regulating purposes. If you will so prepare the tooth, also the inner surfaces of the bands, you will seldom be troubled with their slipping off.

One important thing in which we are all at fault in a measure is this: We do not give, systematically, due instruction to our patrons, especially parents with reference to their children, nor to the children themselves. There ought to be cards or leaflets, not books, which could be supplied to us at $2.00 per thousand, on which should be given all the essential rules for the care of the teeth.

Decay never occurs on any surface which may be and is kept *clean.* The fissures and pits, which cannot always be kept clean by the patient, should be filled on the first indications of decay. Here is preventive dentistry in a nutshell.

Now it is evident that the child who munches between meals, whose teeth are not regularly cleaned after meals, whose mouth is daily and continuously stuck up with those mixtures of starch, glucose, sugar and paint commonly called candies, cannot have clean teeth. On the contrary, they are kept perpetually bathed in unwholesome fluids and decay is invited, nay forced into action at every vulnerable point.

The whole matter resolves itself into this: 1st, what the patient may do for himself; and, 2d, what the dentist may and should do for him. Here again we lack system in the matter of securing regular visits from those whom we have in charge. Some should come once in three, others in six months. Some adults are safe in remaining absent for a year. Many would be willing to come regularly but they forget. We ought to have some systematic method of notification. When a patient is discharged for the time being, an understanding should be had with him as to the time of his next visit for examination. A card of notice should be then and there made out and kept for mailing at the date agreed upon. A card something like the following could be made out and preserved.

MEMORANDUM.

CHICAGO,......... ....189..

M.. ....

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At the conclusion of dental operations requests to be reminded at the end of.........................months that the teeth should be again examined and receive any necessary attention.

RICHARD ROE, D. D. S.

If a plan like this were adopted and carried out we would be enabled to save our patients a great deal of trouble, and ourselves much of the trial and vexation we now experience because of conditions which have been neglected.

Another important thing, neglected, too, by some of our best operators, is the use of a magnifying glass to discover possible defects in the preparation of cavities and the finishing of fillings, also at times adaptation of gold to the walls or margins in the progress of fillings. This is a matter which Dr. Cushing particularly has sought to impress upon the mind of the profession for many years. As he says, it is impossible for the unassisted eye of any person to recognize the faulty conditions which may exist, and whoever accustoms himself to the use of a glass will learn to appreciate its value.

Dr. Townsend, of Pontiac, Ill., whose operations have stood most remarkable tests for a period of thirty years, has at my request given me some "points" for use in this paper. He suggests the following:

1. Neglect to remove calculus and to properly care for the gums. Many when they attempt to do this fail to do it *thoroughly;* fail to remove *all* the deposits *beneath* the gums. Frequently they overlook deposits and pockets on the proximate surfaces of the teeth.

2. Neglect to study the lines of occlusion before building up

to restore the lost portion of a tooth, so that it is built too high or not high enough, or not in proper form.

3. Occluso-proximate fillings are subject to greater strain and require firmer anchorage where situated upon the *mesial* side of *lower* teeth, and *distal* side of *upper* teeth than when upon distal of the lower or mesial of the upper. This by reason of natural occlusion and backward movement of the lower upon the upper in mastication.

4. Neglect to keep proximate fillings dry, with rubber dam in place till well polished and closely examined.

5. The long-continued pressure of packing gold to make a large filling drives the blood somewhat from the peridental membrane, and the root of the tooth is driven more closely into its alveolar cell. The filling may be ground so as to just escape occluding force, or it may just touch an opposing cusp. Reaction setting in, the peridental blood supply is restored, perhaps increased—consequence, the tooth is elongated (apparently) the filling "strikes" and the patient may have a "sore" tooth, or the safety of the filling may be jeopardized.

6. Neglect to grind off fillings on the occlusal surfaces from time to time to correspond to the wearing away of the adjoining tooth substance.

7. Many fillings are closely adapted at the margins when finished, but as they are worn or ground down in course of time, they leak because they were not closely packed against the walls *all the way up*.

I wish to thank Dr. Townsend for these items.

One or two things more and I will leave the subject, or the many subjects, to your discussion.

First, the neglect to provide for the protection of the interproximate gum tissue in the adjustment of rubber dam. I will quote here a paragraph from my article entitled, "*Considerations in Surgery for the Dentist*" (REVIEW, March, 1894.)

"We are very likely to make the holes in the dam so near together that when we have placed it in position the strip of rubber between any two teeth is but a mere string, not wide enough, as it should be, to cover smoothly the interproximate gum. Inevitably, therefore, the gum is caught in one hole or the other and held tightly between the elastic string and the tooth. The circulation in the part is sadly impaired, and there is little doubt that it is sometimes entirely cut off, so that the tissue dies and may never be restored."

I think there is an argument here for previous separation of the teeth—slow, careful wedging with gutta-percha, in those particular cases where cavities extend under the gingivæ and teeth are close together. There are other reasons, but this seems to be an additional one, that the soft tissue may have more room, and a wider strip of rubber used to protect both the gum and the cavity margin.

Another thing good operators are prone to neglect is the early adoption of means to prevent irregularities in the mouths of children. There is too much of "trusting to nature" where nature, like John Hay's character, "*Never aint had no show.*" We neglect to take "*the stitch in time,*" and afterward we or somebody else, and the patient, have to undergo the painful "*nine.*" Waiting is occasionally the thing to do, but the doctrine of non-interference is too often the excuse of laziness or neglect. If we do not wish to do the thing ourselves, or do not know just how, we should call in counsel or turn the case over to some one who is willing and capable.

Permit me here to close with a word for the specialist in orthodontia. We need him—need him worse, if possible, than we do the extractor of teeth. If there be a man in our midst skillful in this line of work, our patients deserve his services and he deserves our patronage. In all cases where we may be unable, for any reason, to render the necessary service ourselves, it would be but narrow-minded policy to withhold from our patients his valuable assistance.

CASE OF RESTORATION OF THE NOSE WITH PORCELAIN.*

BY A. G. SMITH, D. M. D., PEORIA, ILL.

One of the chief charms of this profession of ours is the fact that every year sees many branches added to the art and conceded by the world at large to belong more properly to this new science than to any other. Cleft and perforated palates, broken and dislocated jaws, restoring portions of the face lost through disease or accident, the treatment of nearly all facial neuralgias and many other deformities and affections have in recent years come to be recognized as lying properly within the province of dentistry.

We have long been used to the idea of restoring certain features of expression—namely, the teeth and gums—with porcelain, and it is universally conceded that with this material alone it is possible to produce natural and artistic effects. Although porcelain has proven so useful in restoring the organs just mentioned, it is only very recently that any one has thought it possible to extend its usefulness to correcting that most hideous and repulsive of all deformities—namely, a missing nose.

It was my good fortune, in the spring of the present year, while a student in the senior class of the Harvard Dental School to restore a missing nose, and I accomplished the work after much experiment and discouragement, with the material in question. I first tried rubber, as I was already familiar with the working of this material and because it had been used numbers of times previously for like purposes, but the results were unsatisfactory. This was owing to the fact that the finishing process marred the contour, while, of course, the matching of the complexion could only be approximated by painting, which always leaves a "dead" surface whose artificiality is as readily apparent as that of an undraped wooden leg. With porcelain, however, the case is different. The translucency of the material, the slightly granular and uneven appearance of the surface, the accurate flesh tint that can be obtained in the material itself, all these properties make far more artistic results possible than with any other known substance. Also, the proper color once obtained, the work is as durable and as unchanging as any other piece of china.

In this particular case the patient was a young man some nineteen years of age, and apparently the major portion of his face between eye-brows and chin had been destroyed through the agency of hereditary syphilis, which made its appearance at an early age. All bony and cartilaginous portions of the nose were destroyed; the hard palate was perforated; the turbinated bones were absent as well as the vomer. The floors of both orbits were absorbed, especially under the left eye where a fold of skin had healed in far back under the eyeball, pulling the lower lid down and causing the ball to drop down and forward giving the patient a most uncanny expression. The sight was unimpaired, though the lids could not be made to meet over either of the eyes. These conditions are shown in the photographs Nos. 1 and 2. (Figs. 1 and 2).

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*Read before the First District Dental Society of Illinois, at Peoria, Sept 11, 1894.

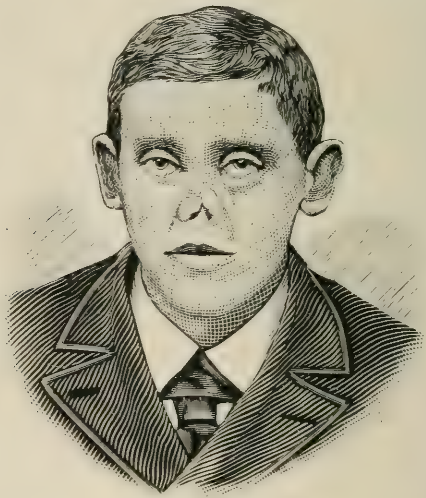

FIGURE 1.

The disease having been in a quiescent state for some years the work of restoration was undertaken. A simple hard obturator was made to close the opening in the palate. This restored the power of speech perfectly. On the exterior I confined myself simply to restoring the missing nose, no attempt being made to alter the relations of the eyes and their lids. Incidentally, however, this defect was largely concealed, as will be shown later on. The first step in restoring the lost nose was to obtain an accurate impression of the face. This was done with plaster confined in a German silver cup, which I made specially for the purpose. The face was oiled and the eyes covered with wet tissue paper. The very small orifices remaining above the upper lip were plugged with cotton (as the cup did not cover the mouth) and the impression then taken. In this way an accurate cast was obtained which gave the facial outlines, and upon which were fitted various styles and sizes of noses which were obtained in the following manner: In a department of the museum of the school are several thousand plaster casts of faces and from these it was an easy matter to obtain duplicates of such noses as seemed of proper shape for the case in question. I soon found, however, that none of these noses could serve even as an approximate model, owing to the great concavity which existed in the patient's face, between the cheeks. So I carved a nose out of wax which was shaped as accurately and smoothly as possible. A duplicate of this wax nose was then made in plaster and the plaster nose further carved and finished. This plaster nose was then mounted on a plaster backing and after the whole had been thoroughly dried a zinc die was made in the ordinary manner, by the use of molding sand, and over this zinc die was poured a lead counterdie, the object being to strike up a platinum shell which should be the exact shape of the plaster nose. Accordingly a pattern was made in the usual way and a piece of thin platinum—No. 33 standard gauge—was carefully struck

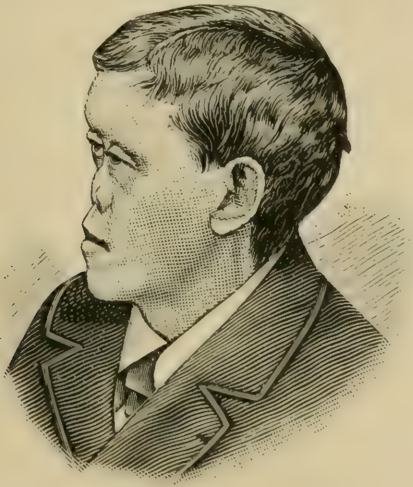

FIGURE 2.

up. Openings for the nostrils were then cut out and these were made rather large to allow for the diminution in size which would be caused by the layer of porcelain. The only seam in the shell was in the septum between the nostrils and this was soldered with pure gold. Two platinum tubes, each one-half inch long and the size and shape of the nostrils, were then made and fitted over the nostril openings where they were firmly soldered with pure gold. This was for the purpose of giving a natural tube-like appearance to the nostril.

This gave a platinum shell, which rested evenly and firmly on the face at every point and allowed free breathing. On this smooth platinum surface was now baked the porcelain manufactured by Close and used for Dr. Allen's "continuous gum work," the object being to produce a porcelain surface which should be a perfect match for the complexion. And just here is where the plot of this simple tale begins to thicken. Of course "body" alone was too yellow, and "gum enamel" alone was too red, so various mixtures of the two were tried, but these were all unsuccessful, owing to cracking in baking, and also the bluish tint of the platinum showing through and destroying the pinkish tinge of the enamel. Then the color was nearly even, which as will at once be seen is unnatural. Finally a thin coat of "body" was "biscuited" on and over this

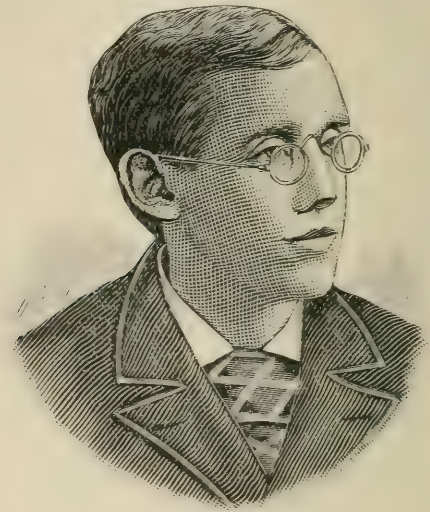

FIGURE 3.

was spread a very thin but uneven coat of enamel. This was fired till thoroughly fused, and after a few trials a color was in this way produced which left little to be desired. I was now confronted by the beautiful glaze of the finished product which caused it to glisten in a highly unnatural manner. To overcome this the corundum wheel was used, but this, in removing the glaze, also took off a portion of the thin enamel coating and thus changed the color as well as the outline. Accordingly with a sinking heart I took up my riveting hammer and gently chipped off for about the tenth time all the porcelain and commenced on the platinum again. I fortunately again obtained a happy combination of "body" and "enamel" and this time, to remove the objectionable glaze, I used hydrofluoric acid (H F.). This entirely destroyed the glassy appearance without in any way affecting the color or shape.

For fastening the nose in position the old idea of spectacles was employed. A piece of quite heavy German silver wire was rolled flat and bent to fit accurately the curve of the upper half of the nose. Under this wire the porcelain was ground away so that the wire and platinum came in absolute contact. Care was taken to have the wire the exact thickness of the layer of porcelain. Holes were then drilled through the wire and platinum shell, and in these small rivets were afterward inserted. This wire strip having been fitted to the nose and temporarily tied in position, the nose was placed upon the face and the spectacles in position and the bows of the spectacles were then fastened to the wire strip by sticky wax. The whole was then carefully removed. The wire strip, with spectacles attached, was detached from the nose, spectacles and strip were then "invested" and silver solder substituted for the sticky wax. It now remained only to rivet the strip on to the nose and the device was finished, and appeared when in position, as shown in the third photograph. (Fig. 3). It is only fair to state that this picture is made without "retouching" the lines where the nose fits on the face, and gives a good idea of the accurate fit and even pressure obtained at all points. It will also be noticed that the metallic rim of the spectacles falls just in front of the hollow under the eye, and so diverts attention from this defect, as well as partially conceals it.

This is, so far as known, the first attempt ever made in America to restore lost features with porcelain, and though this material is rather unfamiliar to most dentists, and somewhat difficult of manipulation it seems to me most useful for such purposes and there exists no valid reason why the dentist with sufficient skill to construct an artistic plate, should not make use of this material in cases similar to the one I have just cited, and which are alas, no uncommon thing throughout the length and breadth of the land. The only piece of apparatus required which is not ordinarily found in a dentist's laboratory is a Parker-Stoddard furnace, the cost of which is some fifteen dollars only. I repeat, that with this furnace and a good stock of patience and perseverance it is possible for the man of no more than ordinary mechanical and artistic ability to produce results equal to that which I have shown and described, and which elicited much favorable comment in medical and dental circles in Boston. This patient was exhibited before the staff of the Massachusetts General Hospital, the Massachusetts State Dental Association, the Harvard Odontological Society, and other Eastern dental conventions, whose exact names I do not happen to remember. Dr. Warren, in a lecture on surgery of the face in the Harvard Medical School cited this case as being a far greater success than any tedious operation of plastic surgery which could have been performed, and highly recommended that the mechanical restoration supersede the surgical one.

Because of the favorable notice that the case has received, and its novelty, I thought it worth while to present it to your notice in the hope that it might stimulate further effort in this direction, and so benefit unfortunate humanity and broaden the scope of our own chosen and beloved profession.

MY MEDICINE CASE.*

By C. B. Rohland, A. M., D. D. S., Alton, Ill.

Before opening my cabinet of medicines for your inspection, let me say first that I have it so placed that, without moving from my position at the chair, or removing my left hand from the patient, I can with the other hand open it, and take up any remedy or remedies I may wish to use. On opening the doors of the case, which is a wall cabinet, probably the first thing to attract attention would be the two rows of drachm vials, with solid glass stoppers, elongated into twisted spiral or screw ends. (See cut).

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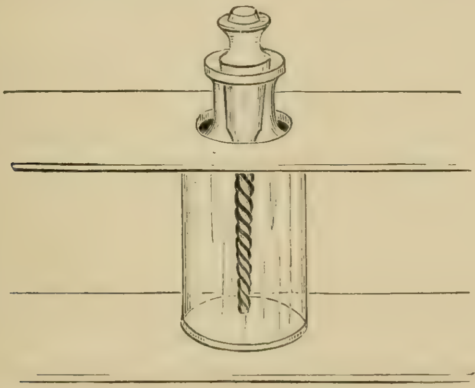
*Read before the Southern Illinois Dental Society.

These vials are held firmly in place by narrow double shelves, fastened on the inside of the doors of the case. This enables me to reach the vial desired with one hand, remove the stopper, which you will see is a dropper and stopper combined, and carry a drop or two where desired. In these vials I keep the liquid remedies most frequently required. The vials are manufactured by Whiteall, Tatum & Co. On the other shelves inside the cabinet will be found a varied assortment of vials, bottles, boxes, drop tubes, Dunn syringes, watch crystals, small squares of glass, and a few common glass salt cellars, for the immediate preparation of solutions, pastes, powders, or their combinations. Many of my medicines are contained in the glass capped office preparation bottles sold at the dental depots. The wide mouth, air tight cap and broad base make this particularly convenient. To digress a little, this bottle is a neat as well as an economical holder for the liquid of your phosphate cement. No nasty, sticky corks to handle, no waste by pouring out, no crystallization about the stopper. A small drop tube left in the bottle will enable you to remove neatly just the amount you want, without soiling either your fingers or the neck of the bottle. An improvement on this bottle, for some purposes, is made by the same firm, which, in addition to the brass cap, is supplied with a ground glass stopper and dropper combined.



Now, as to some of the contents of these vials and bottles. Occupying one of the most accessible places on the shelf is a vial containing the old reliable carbolic acid, phenylic alcohol, phenol,—in crystals, escharotic, obtundent,—in different dilutions, styptic, germicide, antiseptic and stimulant. Its range of usefulness, both by itself, and in combination with other materials, is very wide. In addition to its usual role as an antiseptic and germicide, I frequently make use of it as follows :

When for good and sufficient reasons it is inadvisable or inexpedient to make any further arsenical applications to a partially devitalized pulp, which is too much alive to be either "dragged out" or "knocked out." Under such circumstances I flood the cavity with the pure crystals. By carefully and slowly working up alongside the pulp with a fine broach, giving it time to cauterize and obtund, it can be removed with comparatively little pain. Equal parts of carbolic acid and cocaine hydrochlorate, or better still, cocaine phenate can be substituted for the above. The obtundent property of the acid is increased, with the disadvantage, however, of increased hæmorrhage. When the case will not admit delay, with care, patience, carbolic acid, cocaine phenate, and the necessary broaches, a very live pulp can be reremoved with very little if any disturbance. Sometimes after the removal of a pulp the apex of the root canal remains persistently sensitive. The pure crystals of carbolic acid will effectually cure that trouble.

By mixing equal parts of crystallized carbolic acid fused at a low temperature and gum camphor, phenol camphor is obtained, which closely resembles in physical and therapeutic properties, the campho-phenique with which most of you are familiar. This combination is a good and efficient nonirritating antiseptic, and safe. I find myself using it on my broaches before entering a pulp canal, after applying the rubber dam, to flood teeth and cavities before removing dressings. I use it on my scalers for its antiseptic as well as obtundent properties, on the beaks of my forceps before extracting and after extracting ; on my lancet, before lancing and after lancing. In the treatment of pulp canals, when there has been hæmorrhage, I find myself using it as a dressing, for the reason that I imagine it has a tendency to prevent discoloration, though this I have not verified sufficiently to warrant my asserting this positively. I frequently resort to it in extracting, for its benumbing effect, when the patient insists on having "something put on the gums so it won't hurt so bad." With the impressionable, its success is sometimes astonishing. The skeptical I am bound to say, usually inform me that "it didn't do very much good."

But then the deed is done and there is no further need of an obtunder.

My next vial contains Black's 1, 2, 3, and as I make it contains

Carbolic acid	1 part.
Oil of cassia	2 parts.
Oil of wintergreen	3 parts.

These proportions may be varied, but I consider the above best for general use. To my mind, no better antiseptic for the treatment of pulp canals and fistulas can be found. It is safe, pleasant, nonescharotic and efficient as a deodorizer as well as germicide. On account of its agreeable taste, children ask for it, and adults find it unobjectionable. It is however a slight coagulant, and according to my present methods of treating putrescent canals, it follows, not precedes, the application of some of the essential oils in that class of cases.

The combination of carbolic acid and cocaine has already been alluded to. By adding just sufficient carbolic crystals to the hydrochlorate and rubbing together with a spatula until the cocaine is dissolved, a thick syrup is obtained, escharotic, antiseptic, obtundent. With this I have often obtained most gratifying results in the treatment of sensitive dentine in cavities of decay. It should be used with the rubber dam, dryness to the verge of desiccation secured, applied warm, and treated in situ with the hot air syringe, as hot as can be borne, and again dried before excavating. If one application fails to give the desired result, two almost invariably will be effective. Should, however, sensitiveness still continue I resort to Robinson's remedy, the carbolate of potash. If this too, fails, I discard further medication and rely solely on sharp instruments, new burs, and a light touch to carry me through. For destroying pulps I now use a paste of cocaine and arsenic equal parts, rubbed up with sufficient carbolic acid crystals to make a thick paste. I have yet to find the nerve paste that is always a perfect success. However, prior to my use of the above, a painless "killing" was the exception. The reverse I believe to be now true. I believe I am warranted in saying, that when I succeed in exposing and bleeding the pulps, and getting my paste in direct contact, and avoiding pressure in sealing the cavity, the apotheosis of that blessed pulp is absolutely painless.

These are some of the principal but by no means all the uses

I find for carbolic acid, but the above will show what an essential it is in my medicine case.

The next vials, which I find need most frequent refilling, contain cassia, eugenol, eucalyptus vol. ex. and myrtol. All antiseptic, but varying in strength and range of application. Cassia admittedly stands at the head of the essential oils as an antiseptic. It is a noncoagulant and an effective germicide. Its continued application will, however, cause irritation, and in porous teeth is liable to leave them with a yellow stain, when exhibited too long—a property which must modify its use in the anterior teeth. I use it in putrescent canals, and in the treatment of pyorrhœa. In the latter, I frequently dismiss my patients with the gingival pockets filled with a paste made of cassia and aristol, or cassia and hydronaphthol. A drop drawn into the tube of my hot air syringe, deodorizes it and enables me to blow the hot cassia vapor into pulp chambers or elsewhere for purposes of disinfection and deodorization. Added to water, warmed and well shaken, in the proportion of two drops to the ounce, it makes an excellent mouth wash, stimulant, antiseptic and agreeable. I keep this constantly on my toilet stand for use with the toothbrush. A few drops of the oil put in my warm water kettle, gives out an agreeable odor and is excellent for use in the syringe at the chair.

Should I need a milder antiseptic, eugenol and eucalyptus frequently come into play. The former, stimulating and obtundent, I often use for the relief of odontalgia, and as a dressing in pulpless teeth. The latter for its solvent effect on gutta-percha almost invariably precedes its use as a filling material, particularly in root canals. Myrtol, mildly antiseptic, finds its main use in my hands as a deodorizing dressing in putrescent pulp canals. One application allowed to remain a few days is usually sufficient to neutralize the worst cases.

Iodine and aconite are of course always at hand. With their time-honored uses, both singly and in combination, you are all familiar. In addition to its therapeutic applications I sometimes use the iodine for the removal of the green stain so common on the teeth of children. The neatest way to apply it, is to paint the stain, allow it to remain a few minutes, and polish with powdered pumice. Moistening the pumice with peroxide of hydrogen will increase its efficiency. For very obstinate cases, I have found the five per cent as well as the twenty-five per cent solution of pyrozone especially effective. The pyrozone solutions have largely superseded the peroxide in my practice, and the bottles containing them now occupy the front row on the shelf. The three per cent aqueous solution I find more to my liking for nearly all the uses to which I formerly put the peroxide—because more stable and active. The five per cent is an ethereal solution and is caustic. Within the limitations imposed by this property, I use this solution when I desire a still stronger oxidizer than the three per cent *i. e.* as a searcher for pus, for removing stains, for bleaching, for the treatment of pyorrhœa. The twenty-five per cent is also an ethereal solution, and very caustic. When brought into contact with the mucous membrane, there is considerable pain, and an eschar is formed, which however usually disappears without leaving any sore. Its main use, in my hands, is to bleach dentine discolored by organic matter, to detect pus, and to cleanse the gingival pockets in pyorrhœa.

Hydronaphthol and aristol stand side by side, and have usurped the place once occupied by iodoform. A cup containing a solution of the former is always on my operating case into which I drop my burs, broaches, etc., after using, for subsequent cleansing. Each of these I occasionally incorporate with the oxychloride of zinc, when used for root filling where prolonged antiseptic or medicinal prophylaxis is desired. A paste made of aristol and eugenol, or aristol and eucalyptus makes an excellent temporary filling for the pulp chambers of temporary teeth. Dissolved in chloroform, it makes an excellent varnish for temporary cotton stopping. The cotton will remain unaffected by the secretions for a long time.

My menthol bottle also occupies a prominent place in the case. Combined with aconite and applied on a pad to the gum it will often check incipient periostitis. To make a pad, cut a piece of porous plaster the required size, warm until sticky enough to adhere to a ball of cotton, on which drop the medicine desired. As a topical application, combined with chloroform and aconite, it makes a fairly efficient local anæsthetic, superior to, and much safer than most of the nostrums so liberally advertised. Combined with eugenol it makes an excellent dressing for an inflamed and aching pulp. When taken internally, however, it may produce nausea, which must be taken into consideration in its administration.

I have not yet mentioned the king of germicides, bichloride of mercury, for the reason that I make very little use of it at the chair. I have it, of course, and would not be without it, but I keep it more for my own use than for the patient. A bottle of Parke, Davis and Co.'s antiseptic tablets No. 180, is constantly at hand. Any wound, whether received at the chair or elsewhere, I instantly bathe and soak thoroughly in a solution of the bichloride, and bind with lint or adhesive plaster moistened with the same. Indeed, after operating on any one whom I may suspect of specific taint, I invariably soak and brush my hands thoroughly in a strong solution. The tablets are very convenient, because solutions of any strength are so easily made. Although the acknowledged king of germicides, its extremely poisonous qualities, its effect on steel instruments, its liability to discolor teeth, its unreliability in the presence of albuminous matter, have inclined me to other less objectionable remedies for use in the mouth, or for the disinfection of instruments.

It has not been my purpose in the foregoing to enumerate all the remedies either new or old in my case, that I consider indispensable. Every one in the course of his practice and study however will find himself resorting to some particular set of remedies more frequently than others. An inspection of this set will furnish a very reliable key to the therapeutic practice prevailing in that office. I expected to take a few of the principal remedies I now use most frequently, and discuss with you the principles governing me in their application. The matter, however, grew to such proportions, that I have only been able to skim over a few of the more salient features incident to my daily therapeutic practice. I find that I have mentioned, however, nearly thirty different preparations, and I have barely entered upon the consideration of the contents of one shelf. Those mentioned however represent fairly my most trusty weapons of offense and defense. I do not present these as the best or only resource. Many roads lead to Rome. Some may be a trifle longer or more tedious than others, but as long as they follow the right direction, one will get there on any of them. What particular remedy may be used is not nearly so important as that it be intelligently selected and scientifically applied. I accomplish my work with one set of remedies. You may accomplish the same thing with an entirely different set, but the same principles must govern us both.

The remedies available for our purpose are innumerable. A thorough minute working knowledge of all of them is very desirable, but not at all essential. The principles governing their use are comparatively few, but the thorough mastery of each and every one of them by him who wishes to be competent is absolutely indispensable. To apply remedies without knowing why, is like shooting at a target in the dark—very apt to go wide of the mark and do no good, if indeed no harm result. To apply remedies intelligently requires first a mastery of the general principles of therapeutics, next a comprehension of the pathology of the case, then familiarity with the properties of the medicines available, and last but not least, judgment to select what will best meet the requirements of the case. A thorough knowledge of a few well selected remedies is better than a flippant familiarity with many. So, too, one single remedy intelligently applied will accomplish more than any "shotgun" prescription fired at random. Nevertheless, gentlemen, it is our duty to keep informed on the therapeutic discoveries of the day, so that should anything new offer that bids fair to accomplish our work better than anything we now have, we may study and investigate it, and as soon as we have acquired a good working knowledge thereof, we should appropriate it to our use, for the benefit of suffering humanity.

THE TREATMENT OF PULPLESS TEETH.*

BY A. J. OAKEY, D. D. S., CHICAGO, ILLS.

By the term pulpless teeth I shall presume that teeth in which the pulp is not alive is meant. We can scarcely read any dental magazine or review, or dental literature of any kind where we do not find something in regard to the treatment of pulpless teeth. Doubtless one reason for this is the position crown and bridge work now holds with all practitioners. Many roots that formerly were considered only a detriment in the mouth are now restored by treatment to health and usefulness. They may be utilized as abutments for bridge work, for the support of crowns, to preserve the correct position and articulation of neighboring teeth, and also to preserve the proper contour of the lips and cheeks. The loss of a bicuspid or molar may play havoc with the delicate contour of an otherwise beautiful face. Too much stress cannot be laid on this phase of the question, especially when a well-meaning, though ignorant applicant presents herself for the removal of a tooth. Oftentimes when all other arguments fail this one will bring success. Among the diseases which may result from pulpless teeth I shall mention :

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*Read before the Hayden Dental Society, May, 1891.

Pericementitis—the inflammation of the peridental membrane in the apical space; chronic or acute abscess; neuralgia, earache, etc.

How shall I diagnose a pulpless tooth? Among the symptoms may be soreness to touch, neuralgia, earache, unusual length of tooth, dark color, abscess with fistulous opening and lack of sensitiveness to heat and cold. The heat test may deceive in this way: Heat applied to a pulpless tooth may cause the mephitic gas in the pulp chamber and canals to expand, causing pressure on the tissues in the apical space and consequently pain which may be mistaken for the response of a living pulp.

The future of a pulpless tooth depends on its proper treatment and on the insertion of a proper root filling. Let us consider a case. A patient presents complaining of a tooth being so long the mouth cannot be closed without causing extreme pain. The tooth has a large filling. I should apply the rubber dam carefully. If drilling causes much pain, I should tie a ligature about the tooth and have my patient apply pressure in the opposite direction from that in which I intend to direct the force.

Drill carefully into the pulp chamber so as to prevent pressure on the contents of the canals and the forcing of an irritant into the apical space. Carelessness in regard to this point may bring you the additional difficulty of severe pericementitis followed by an acute abscess, and cause your patient unnecessary pain.

Dr. Cushing's expression so often repeated to the students, "delicacy of manipulation" is certainly as applicable here as when working on sensitive dentine or near an exposed pulp.

After getting an opening to the pulp chamber I should apply carefully an essential oil and seal loosely, and leave the case until the soreness, in a large degree at least, passes away. For the next sitting after applying the " elastic profanity " (if my patient is from Boston), I should remove the contents of the pulp chamber with fibers of cotton on a fine broach. My next treatment might be the introduction of H_2O_2 to the pulp chamber, pumping it into the canals carefully until there is no more effervescence.

The H_2O_2 is of importance as a therapeutic agent because of its instability (being composed of two atoms of hydrogen, and two of oxygen), in the presence of a variety of agents being decomposed, the liberation of the atom of oxygen causes the foam or froth always noticed. The nascent oxygen attacks the adjacent tissues and becomes a powerful bactericide. Also in the foaming process it washes out much of the contents of the canal. Instead of this treatment I might apply on a fine broach the kalium natrium recommended by Dr. Emil Schreirer, of Vienna, Austria. This medicament applied to the putrescent contents of the canal is changed into the hydrates of kalium and natrium, and the fatty substances are saponified. Heat is evolved during this chemical reaction which while not sufficient to kill bacteria, will destroy food for their future development. The contents of the canals may be washed out now by hot water, which in itself is a disinfectant. As oil and water will not mix, I now dry out the canals and insert an essential oil, usually cassia. The cavity is now sealed and left for a few days, when I expect it to be ready for the root filling.

Here I come to another large and important branch of my subject, a branch about which there is great diversity of opinion, a method successful with one operator being a complete failure with another. The method may be a good one, but the application in one case faulty. It is hardly fair to say a method is a failure unless we carefully follow the directions of the operator recommending it. A physician may recommend a Seidlitz powder for constipation, giving you directions for taking and telling you the results are pleasant. Now if you dissolve your powders in different glasses of water and instead of pouring them together before taking you swallow the contents of one and then of the other, if the result is not pleasant do not blame the physician. Another thing to be considered in the expected results from the treatment of pulpless teeth is the general condition of the patient. Very different results may be obtained in the treatment of a pulpless tooth in a robust, healthy person, from that in a weak, anæmic one. Among root fillings may be mentioned the pulp itself, many anterior roots of lower molars and buccal roots of upper molars often being filled with this material, gold, lead, wood, cement, cotton, and last but not least gutta-percha dissolved in chloroform. To fill the root I apply the rubber dam and remove with a heated instrument the gutta-percha filling, and also the medicament, taking care that all instruments, cotton, etc., are in an aseptic condition. I dry out the roots with cotton, followed by hot air and the Woolley or Evans root drier. I then apply on a fine broach eucalyptus oil, which is said to hold the chloro-percha to the walls of the root. After taking up any excess of eucalyptus I pump a drop of chloroform into the canals and then the chloro-percha is added and forced to the apex. If the foramen is large the patient quickly tells you that you have reached the hurting place. I then take a gutta-percha point that I think will fit the case and press it into the canal. If I am to put in a gold filling I first usually put in a temporary filling and let the case rest for a few days. If any other filling is to be used I fill at once.

Dr. McKellops, of St. Louis, says in regard to root filling, "I am much interested in this subject, but how many roots can you get into? It is all well enough to talk, but to practice is another thing. No matter how small the broach or skillful the operation you cannot get there and it is foolish to talk otherwise." This coming from an old expert practitioner is surely comforting to we younger men when once in a thousand times we do not feel absolutely sure we have filled perfectly every root. I am interested in but have not tried the method of root filling advocated by Dr. E. A. Mascort, of Paris, France. The doctor thinks at last he has found the ideal root filling in salol, which is a combination of salicylic acid and phenol. It is a white crystalline powder without odor, nearly tasteless, and insoluble in water. It is an antiseptic, germicide and antipyretic, and is less poisonous than either of its constituents, carbolic or salicylic acid alone. In trying to dry a test tube in which to dissolve some salol in alcohol, while the tube was still warm, Dr. Mascort put in some salol which at that low temperature became liquid. He observed that upon cooling, it crystallized into a solid mass. He applied these facts to root filling. His method is this: After drying the root he takes a portion of salol in a test tube and liquefies it over a flame, then with a warm hypodermic syringe the liquefied salol is taken up and forced to the apex of the roots, withdrawing the needle slowly and forcing the liquid in while withdrawing it. Capillary force in the canal retains all of the liquid. After the liquid crystallizes it will be nearly as hard as the dentine. I like this method for this, among other reasons: The operation of removing a root filling of any material (excepting cotton, etc.), is always a tedious one. Filled with salol a heated instrument will liquefy the salol which with fibers of cotton or with absorbent paper may easily be removed.

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PROTHETIC DENTISTRY IN COLLEGES.

It is gratifying to note the progress of dental colleges in the matter of practical instruction within recent years evidenced in the introduction of courses of study in operative and prothetic technics. These courses have for their object the preliminary instruction of the student in the various procedures of practical dentistry outside of, and away from the patient. To complete his practical instruction, and to prepare him in a measure for active professional work it is necessary that these various technic operations be carried out upon the living subject. In some of the colleges where courses in technics have been established, the instruction has been supplemented by operations at the chair both in the operative and prothetic departments, but there are still many institutions which cling to the old didactic method of teaching in which the student is expected to absorb his lessons in practice from the lectures, and to reproduce them by his hands only in later years after the college course is ended. Not that infirmary instruction in operative dentistry has not, in most instances received attention, but it is certain that prothetic dentistry has been neglected, and has not received the attention it deserves from college students, college faculties, or the dental profession.

A mechanical laboratory is usually a prominent feature in the facilities offered by colleges (in their announcements). As a rule however, it is inadequate in light, in capacity, or in conveniences of any kind. Old furnaces, old lathes, old vulcanizers, a poor rolling mill, if any at all, a meager gas supply, and poorly constructed benches, are the facilities which in many instances are afforded the student to enable him to construct the delicate appliances which act as dental substitutes. Catalogues are beautifully worded, setting forth the advantages which each school has over its neighbors, until the prospective student becomes fully imbued with the idea that no college in the land is so well supplied with technical appliances for his instruction as the particular institution whose announcement he may happen to have received. Not until he arrives at the scene of his studies does he discover that the furnace for continuous gum work lies in sections about the college building, and has scarcely seen service since the foundation of the institution, the furnace for the baser metals consist of a single worn out stove, the full supply of lathes are found to be two or three worn out affairs requiring almost the muscle of a Sandow to make them useful, and seldom in order when needed, the large number of benches "more than sufficient for the needs of the school" dwindle in the proportion of one to three of the students; possibly, but not probably, a rolling mill upon which it is a difficult task to roll lead, one vulcanizer whose leakage usually causes a six hours' delay and a porous plate, and finally, as if this were not enough may be added a plaster supply of the poorest quality. These things are expected to fill the mind of the student with the largest ideas of the delicacy of the manipulation necessary to produce perfect results in this branch of dentistry. With this equipment he is supposed to become expert in crown and bridge work, and in applied mechanical dentistry, from a rubber to a continuous gum plate ; so expert in fact that at the end of his college course he is permitted to go forth and pose in his community as a scientific dentist, one who has received the benefit of three years' scientific training.

Is it any wonder that crowns do not fit, that bridges fail and that mechanical appliances intended for the mouth bear a greater resemblance to chips than to dental substitutes? Or is it miraculous that students have no love for this branch of their work, that practitioners prefer to send their work to specialists so called, or that the number of expert dentists in the substitution of the artificial for the real is growing sensibly less?

Again in the few colleges which do provide adequate facilities in this branch, the course is almost entirely a technic one; the detail of the mechanical construction is taught, but the actual contact with the patient, the process of fitting an artificial denture to the mouth, upon which so much of its success depends, is lost to the student, and he leaves the institution to gain by successive failures, the knowledge which he should have acquired in college. Ninety per cent, yes, ninety-nine per cent of the students who have gone out from our schools, it may be ventured, have never inserted a practical denture in the mouth of a living subject, have never taken an articulation, and do not know how a perfect fitting plate should feel or act in the mouth.

Post-graduate schools exist for no other reason than that the demand created by students and practitioners who have realized the inadequacy of college instruction in this department is so great. Even these schools scarcely do more than furnish technic instruction, yet in spite of this fact, these men find themselves lacking in a knowledge of the detail of mechanical construction and seek the meager instruction afforded in these institutions.

An excuse is sometimes offered by college faculties that clinical material for this branch does not exist. This excuse will not hold, for it does exist, and in evidence may be offered the large number of quacks and charlatans abroad in the land who work on the credulity of an abused public simply because the services of experts in this branch of dentistry cannot be obtained at a small cost. When this public discovers that the services of experts, or at least the supervision of experts can be obtained at a nominal cost, clinical material in our colleges will not be wanting.

The existence of post-graduate schools instructing almost entirely in dummy work, well maintained from the ranks of recent college graduates and the average practitioner is a sad commentary on college instruction in prothetic dentistry.

G. J. D.

The Advance of Dental Science.

A disheartening intimation has lately gone forth from those in high standing in the profession, to the tune that no real advance is being made, or has recently been made in the science of dentistry. The argument is used that while dentistry as an art has made wondrous strides in the past quarter of a century, the scientific phase of the profession has gained little ground. What are the facts in the case? Is it true that the science of dentistry stands where it did a decade ago? Are the investigations of our scientific men—and we have scientific men in dentistry—to stand for naught? Do we understand the diseases of the mouth and teeth no better than we did when Fox and Bell wrote, or even when Watt claimed that caries of the teeth was due to the mineral acids? Is the pyorrhœa alveolaris of to-day no better managed than was the "Rigg's disease" of twenty years ago? Are we treating alveolar abscesses along the same line as our fathers treated "ulcerated teeth"? Does an abscessed tooth hold for us the same horror that it did for our predecessors? Are we saving no more affected teeth to-day than they were a quarter of a century back? Have we learned nothing about microörganic life and its relation to health and disease? Are we really standing still?

Queries might be increased almost indefinitely, but the correct answer to a few of those already made would go to prove that the scientific aspect of dentistry is not lagging so piteously in the rear as some of our seers would have us believe. The present age is one of intense activity along all lines of human thought, and it has well nigh come to be the creed of some that unless sensational developments occur every few days it is an indication of stagnation. What we need in dentistry is a normal, steady growth of knowledge that shall accrue more and more to the benefit of humanity, and when we compare our present attainments in this connection with those of years ago we have no reason to feel discouraged at the progress made in the science of our profession.

The Responsibilities of a Teacher.

Now that the dental colleges are well under way for the winter's work it may be profitable to call to the attention of the professors the nature of the responsibilities assumed when a position of this kind is accepted. If every professor and demonstrator would lay well to heart at the outset of each session the far-reaching nature of his influence, and if he would shape his entire course in accordance with this idea, our young men would go forth to cope with life and its contingencies much better equipped than is the rule at the present time. It is not enough simply to teach our students anatomy, physiology, chemistry, oral surgery, materia medica, prosthetic and operative dentistry, together with the routine of office practice. Teachers must carry their influence into a broader sphere of usefulness than the mere imparting of technical knowledge upon technical subjects.

The worthy example of a strong-minded teacher is more potent for good to a class of students than is generally supposed. Students naturally look to their professors for a higher status of attainment than belongs to the average practitioner, and the man who will accomplish most in the way of elevating his class to the highest possible order of excellence is the one who in addition to imparting knowledge upon the scientific phase of his subject never loses an opportunity of giving an object lesson dealing with the broader lines of character and conduct as it relates more particularly to the professional life of the individual. The majority of students come to us at an impressionable age, and a conscientious teacher may do much in the way of molding the character of the members of his class by a sturdy example of dignified manhood, and a frank and cordial intercourse with them in all their relations. When we speak of object lessons we do not mean moralizing. Nothing will so soon injure the influence of a professor as to gain the reputation of being a prig or a preacher. Practicing is better than preaching for a class of dental students.

Another phase of college instruction which professors very seldom stop to consider relates to the far-reaching effect of their teaching. Few teachers realize how extended is the influence they wield when lecturing to a class of students. The evident idea with many seems to be simply the preparation of the student for his graduation examination, when as a matter of fact this is a very small consideration compared to the real and true function of a teacher. The greatest good that a teacher does invariably finds its final and truest expression in its influence on the public at large. If a student be taught false or dangerous doctrine his patients must necessarily suffer the consequences after his graduation, but if he be instructed along the latest and most scientific lines, if his training be careful and conscientious, he will go out prepared to do humanity a good service and work successfully toward the mitigation of human suffering. It should be an inspiration to every teacher to feel that he has it within his power to exert so wonderful an agency for good, and it should incite him to his very best possible endeavor to the end that future generations may find it in their hearts to "rise up and call him blessed."

TRANSACTIONS OF THE COLUMBIAN DENTAL CONGRESS.

So many inquiries are being made about the publication of these transactions that a word of explanation seems necessary. There are few outside of the publication committee who realize in the slightest degree the immense labor and the many difficulties connected with the completion of this work. The confusion of tongues, the incomplete condition in which much of the matter was turned over to the committee, the number and nature of the illustrations, and the distances lying between the committee and many of the contributors all tend to retard the work. When it is learned that in none of the many congresses held during the World's Fair year has the official transactions yet appeared it will be seen that the dental profession is in no wise worse off than the others. We are assured by the committee that the work is being pushed to completion as rapidly as posible, and while no definite time can yet be set when it will for a certainty be out, the promise is made that the many friends of the congress will not have long to wait for its appearance. We may, moreover, be pardoned for whetting the appetites of our readers by assuring them that when the work finally does appear in all its completeness it will prove a delightful surprise to its recipients. No one but those who have had access to the entire proceedings can realize the extent of the work nor estimate the permanent value it will have for the profession.

TESTING AMALGAM ALLOYS.

Dr. G. V. Black, of Jacksonville, Ill., and Dr. E. K. Wedelstaedt, of St. Paul, Minn., have recently been experimenting with the view of learning something definite relative to the edge strength, compressibility, contraction, expansion and leakage (if any) of the different makes of amalgams. They are desirous of obtaining specimens of all the American alloys, and to that end send out a request to manufacturers and the profession generally to forward to them samples of the different amalgams in use. The amalgam filings should be carefully wrapped in paper and the name of the alloy written on the outside. Enough of the filings should be sent to make six or eight fillings of the ordinary size. Those who wish the results of the test of any sample sent may have them by sending a request at the time the sample is forwarded. We bespeak for Drs. Black and Wedelstaedt the hearty coöperation of the entire profession. This is a matter upon which more light should have been shed long ago, and now for the first time we are promised something definite. Samples may be sent direct to Dr. G. V. Black, Jacksonville, Ill.

DOMESTIC CORRESPONDENCE.

New York Letter.

New York, October, 1894.

To the Editor of The Dental Review:

New York is filling up with life rapidly. We never saw so many good looking, vigorous, and well dressed people at this early date. No such promenade in any country—not even in California, as one can see these fine days on Broadway from Fourteenth Street to Herald Square at Thirty-fourth Street, and from Twenty-third Street up Fifth Avenue to the Plaza and Central park; and the cavalcade of turnouts for the afternoon drive through the park and up Riverside. Such a display of richly caparisoned horses and carriages cannot be reproduced. Our walk after 3 P. M. is often in view of this pageantry of the multi-millionaires. It does not trouble us that we are "nothing but a dentist." We never saw the moment that we wished to be otherwise. Here and there we meet a pale-faced practitioner who has been in town all summer, but mostly they are browned tan color, that's the fad in dry goods. We got on a little tan by a ten days' sojourn among the Berkshire hills, an elevation of some 1800 feet. Dentists thrive up there. We called on Dr. Stowell, of Pittsfield, the inventor of the all porcelain crown that we reported in one of our letters some months since, he having exhibited it at one of the society meetings of New York. We found him nicely fixed in a full practice, mostly from a city clientele, Pittsfield being a fashionable rendezvous for swelldom. It is a source of pleasure to note the comfort that some of these inland practitioners are surrounded with, owning their homes, keeping their horse, and adjacent to wood and brooks, and such bracing air as these Berkshire hills are bathed in, it is truly an inspiration to breathe. Woe to the city ambition that too many get inflicted with; they do not know how much better off they may be. Dr. Stowell showed us a new invention of his, a diamond drill that never (hardly ever) wears out. We saw him drill through a carborundum disc and then put it through a three-eighth inch plate glass in less than six seconds. The doctor is up to all the demands of the day. He let us examine an operation on a twelve year old patient then in the chair. It was a fractured superior incisor, and he had grafted on some porcelain that made an artistic supply of the loss. We visited Lenox, the notable place in the hills, a veritable Newport in the mountains; places costing into the millions; grounds occupying a thousand acres cultivated in the most artistic taste that money can purchase. Chicken coops $2,800 apiece, etc., etc. This is the place we referred to in our last letter where the renowned Dr. Deering reveled in dental practice at $15 an hour thirty years ago. There is no settled practitioner there to-day. If any ambitious fellow has got a dress suit, "parts his hair in the middle," says "ither," and drives a cob team, he might get in the swim. One practitioner told me he announced in his town up in these hills that he only wanted the practice that went out of town before he came. Do you see what that means? It means this—there is always in every well-to-do place people who do not think those in town can suit them, and many such go to the cities.

Another fact is becoming more true from year to year; many city people have got an idea that in the country they can get their teeth cared for at a big discount, and many of them are doing it. But one has to pay, we found, for his cuffs and collars, as the country folks are fast getting their eyes open for business. We are not sorry that we are a city practitioner. "It just suits me."

We hear men ask, "What's the use of clinics?" This recital will be one of not a few answers. A dentist in the South had rattled about in practice and managed to get beheaded by violation of the code, and by this became very much disgruntled. He purchased a plantation and determined that he would turn his back on dental practice, believing fully that it had nothing in it for him. During a dental gathering at Atlanta, clinics were given by Dr. Parmly Brown, and this practitioner was in attendance and became an interested party. After the meeting had closed and the cars were carrying the dentists to their homes, this gentleman was on the same train with Dr. Brown. He came and sat down beside the doctor and told him his disgust for all things pertaining to dentistry, and how he had decided to get out of it. But, said he, "When I was watching your clinic and saw its results, it put a new thought into me, and I made up my mind that I had possibilities of something more than anything I had accomplished, and further, I want to come to your office and take tuition. I believe I can make an operator of a class that will find a field where there will be a demand for skill." He carried out his purpose and now is the moving spirit in the flourishing dental college in Atlanta, Ga., and has a fine and lucrative practice on his hands. This gentleman is Prof. Crenshaw. We have met him, and he vibrates with a purpose to be at the front. If the history of clinics in New York could be written they would show more for the energy expended than anything that has been done for the past thirty years in the interest of practical dentistry. The man that to-day croaks against clinics has never contributed to them anything worthy of notice. We have met Dr. Flicenger, lately of St. Louis, at Dr. Parmly Brown's. He was in New York in the interest of porcelain bridge work. He is a practitioner of more than ordinary observation, as we will prove. He has showed us a record of 420 contour fillings made in nine months. Twenty-two have chipped off in some part, thirteen have broken out or away from the tooth structure. His study is that he may find out if there is a weakness in his method of operating. He has the drawings of all these operations; they are really of interest. They would be an object lesson of worth for any dental journal. How few practitioners there are who are thoughtful observers. The doctor gives us a note worthy of attention. In 1864, coming to dental practice when only a boy, a patient called in the absence of his preceptor with a decayed spot in connection with a gold filling. For the comfort of the patient he placed some amalgam in the cavity, afterward telling his tutor what he had done. He was reprimanded, for he was told that it would make "electrical" discomfort. But it never has, and remains good in its place to-day. Doubtless Dr. Norman Kingsley, so far as the record is known, first gave it out as his common practice of combining amalgam and gold in fillings.

This reminds me of another claim made by the Californians in their published reports in the *Cosmos*. The claims of the rubber dam, and this latter one, the one regarding "Rigg's Disease" detracts much from their value.

In the *Missouri Dental Journal* a claim was made years ago by one Dr. Brewer of California, and we proved at the time by his own statement, that Dr. Riggs had a prior claim for originality. Regarding claims, the claim of Dr. Wells for anæsthesia would be completely wrested from him if possible. There is a decided expression in favor of making the gathering for celebrating this important event centralize at Hartford, Conn. It is not thought at all necessary that it should be commemorated in several places, but that the emphasis should be placed in the city of the birth of discovery. It is thought that this celebration is in danger of being minimized. It can be made to cover dentistry with proud distinction, and it ought to be. Hartford is the most beautiful inland city doubtless in the world. There are no more imposing public buildings anywhere certainly, than at the capitol. Bushnell Park—originated by the distinguished divine of that name—is unequaled. The Soldiers' Memorial Arch at its entrance is the admiration of all. The buildings where the largest insurance interests of all countries are concentrated are models of elegance, costing millions of dollars. Chicago had a big hold on Hartford after their big fire. Have you forgotten it? And in the midst of this city are the unique, luxurious homes of many of the distinguished of the world who are everywhere known, viz.: Harriet Beecher Stowe, author of the renowned "Uncle Tom's Cabin;" Isabella Beecher Hooker, the heroic exponent of woman's rights; Charles Dudley Warner, the brilliant writer; Mark Twain, the humorist, and a host of others, not forgetting the Charter Oak. Few cities can look with just pride to so many attractions. It comes to us now in writing that a choice selection of one who could do such an occasion justice as an orator fully capable of gathering up the subject matter of interest in connection with this city would reflect additional luster upon this memorial occasion, and no one could do it with such grace and art as Prof. Garretson, of Philadelphia.

In looking over some of the copies of the *Dental News Letter* editorials by the late Dr. C. C. Allen we come upon a bit of news that reflects certainly no little credit upon practitioners as far back as 1845. There was at that period a society of dentists including names that are not forgotten among us, some few of them are living; so far as we know Dr. Dwinelle is the only one. Such names as Dr. Geo. E. Hawes, C. C. Allen, Foster and others, are easily recalled in connection with this organization; there were in active progress clinics held each week, the operators being appointed at certain days in each week; invitations only were extended to members and their students, and a record was kept of the operations. It has been generally thought that clinics were purely a modern affair; we thought so, but we are glad to note this fact.

The character of clinics introduced by our esteemed Atkinson were more far reaching in their benefits, for they possessed such a spirit of fraternity a soil of vastly larger production was created. No respect of persons was tolerated. In Dr. Atkinson's purpose a "dentist was a dentist," and instructions were free to all and given in his own open office which was in marked distinction to the prevailing custom of earlier years. We recall our experience in hoping to get an inside view of a New York office some two years previous to our coming to the city in 1858 to locate. We had introductions to two dentists in Bond Street, then the Mecca of dentists, Drs. Waite and Jehiel Parmly. They received with almost exquisite gentility, but only in their parlor, where the "spider and the fly" met, although we did not encounter either insect. No more did we get a glimpse of the charmed spot where they did it, "fill teeth."

We were a very hungry fellow in those days for a chance to step up. We will tell a little reminiscence. A notice appeared in the *Cosmos*, "Wanted, an associate." We made application and after a great deal of legal acumen being brought to bear and many barriers attached to the bonds of association we were actually a practicing dentist in the city of New York, which had been a burning ambition of ours. Just here hangs a little tale. We found there had been another applicant for this place, and we had won the prize—as we then thought it to be. We found out in a few months to our sorrow that the spider had got the fly, and finding a more favorable opening through that large hearted man, Asel Jones, then the associate of Jones, White & McCurdy, we formed an association with the late Dr. G. A. Cooper, of Brooklyn, and it proved so favorable for us that we will give the character of it for the benefit of those who may desire to secure a practice fairly and honorably. This we emphasize because we know of so many disasters coming from "buying out a practice." One can see the wonderful openings monthly arrayed in our journals. Too often have they turned out a cheat for one or the other. Often have we been asked regarding this business and we have replied that we could see but one fair way in such a transaction. Form an association that means a mutual one. Let both mean righteousness, and there will be more success than is generally the case. No one can sell a practice in this country as one does a horse. It can be done in Europe for there, by the existing customs, it is feasible. Yet do not overlook the fact that one does not purchase a practice, it is but a business and there is a mighty difference, though very few regard it so. We again say that no one can sell a practice—it can only be transferred.

Our experience with Dr. Cooper we think proves our assertion. Dr. Cooper had the confidence of an excellent clientele because of his skill. We formed an association for two years, we paying him a cash payment of $500 and agreed to give him a fourth of the proceeds, Dr. Cooper giving one-fourth of his time at the office, he being in ill health and desiring to be free a portion of the time. No change was made in the surroundings—our bills were headed G. A. Cooper and G. A. Mills, and everything went on as an association, although we had entire control of affairs, we being on the ground all the while and favorably introduced, nothing occurred to mar the success of the entire two years. One thing we will mention that is important. Dr. Cooper agreed not to practice within a radius of 100 miles during the two years; nor to return to practice in Brooklyn for five years. At the end of two years we were virtually in possession of the practice. If the party desiring a practice has ability, he can by this form of association have transferred any one's patients into his confidence. Our counsel would be to those who desire righteousness, "Don't buy out any one; make only a professional transfer by association."

We have just been reading the article on "Economics" in the September *Cosmos*, and there is not a little good reasoning in it. We do not accept the writer's views that some do not lean to the rationale of financial success, as being in harmony with a true professional pursuit. We do not believe that any true professional man has ever held such a doctrine. But the true professional practitioner does, however, find great difficulty in securing a financial success and keeping strictly to the line of humanitarian practice. This would not be so if it were more common that the larger number were like-minded. We think this perhaps is more largely true with our practice, because of the lack of professional development; with an increase of this, possibly it will become better in this regard. Yet we must admit that the nature of our calling involves so much more of manual labor and material expense it may be more difficult to become so far removed from the commercial spirit—we think they have gone over to another extreme, regarding inventions—as the medical profession is. The true professional dental practitioner is not in opposition to his receipt of finance, and in liberal proportion to his skill; but what he does make a distinction in is this, that it should not become his daily habit to make it his first consideration; such a dealing will by force of habit become mercenary; and mercenary men are heard to say that "*they* let no one go out of their office without paying a fee." We give these few thoughts to this paper as a hint; yet there is something to be said on the other side. We are much interested, always, in reading Prof. Miller's writings. His late article in the September *Cosmos* is worthy of particular notice. Just how much of this is new is not quite easy to determine, except that the addition of thymol as an anæsthetic and antiseptic may be.

In connection with the use of arsenic for destroying pulps we still adhere to the thought of many years, that this drug leaves a latency of possible difficulty in very many cases because of the unlimited effect of the arsenic. We have cases recorded in journals to prove its penetrating power, even through the peridental membrane and destroying the entire alveolar socket. We refer to a case reported in a number of the *Dental Miscellany*, by Charles Tomes, of London. This to be sure was an extreme case, but it has a decided bearing upon the subject. The time *will* come, that arsenious acid will not be employed for the destruction of dental pulps.

The more we read Dr. Talbot's article given at the Midwinter Congress, the more we are sure he has stated some trite facts which cannot be blown out like a lighted lamp, and men who care for merited repute will do well to consider them. Dr. Talbot's allusion to Dr. Kirk's editorial regarding our lack of scientific advancement is not misplaced. We notice that a California man has batted a ball squarely between Prof. Harlan's eyes. "Will coagulate the tissue and leave the pigment."

Well, this makes the game a little more lively. The professor seems to have rested since Dr. Kirk's paper was published. Does silence give consent? They do have the push on the Pacific Coast—they have done a nice thing in their achievement of the photographed congress. The faces are definitely brought out. The

Younger men are at the front. This reminds us of our childhood days when the younger ones must be seen, not heard. They are a good looking lot of fellows. Grey hair and bald heads are more frequent than thirty years ago. Does any one see a face that much resembles Prof. Winder in that crowd? We do.

Soon there is to be another "pictorial memorial" of the fiftieth anniversary of Wells' discovery, and New England is going to feel sore that Hartford is not to have the blaze of glory and feel that the whole affair is going to be cheapened, so far as it concerns the surroundings of the discoverer. It is not too late now if they bestir themselves to change the current. QUID NUNC.

COAGULATION?

To the Editor of the Dental Review:

DEAR SIR:—In the September issue of the DENTAL REVIEW, page 657, one of the speakers (Dr. Baldwin) said, "The profession generally have been taught in the past by a would-be celebrity that carbolic acid should never be used in a pulpless tooth, because it coagulates the albumen, thus preventing its action only on the surface and cutting it off from any action upon the rest of the tooth. All it needs is a careful perusal of Dr. Kirk's article, illustrated by his many able experiments, to show that this so-called scientific authority upon carbolic acid knew nothing of what he was talking, and the strong probabilities are that very few of the experiments which he speaks of in his papers, are even experiments in reality—only simply dreams."

The speaker is at liberty to draw his inferences from things he sees, but to charge in public before a dental society that reported experiments are "only simply dreams" is rather too imaginative to go on record without a protest. Many modes of practice with pulpless teeth have been presented by various members of the profession at different times in the past, but never before has a speaker, to my knowledge, charged an author with reporting experiments that were never made, without producing the evidence that such a charge was true. As I am the "would-be celebrity" and "so-called scientific authority upon carbolic acid" alluded to, I desire to enter a vigorous protest against such baseless imputation as the aforesaid speaker has sought to fix upon me.

Respectfully yours,

CHICAGO, Sept. 25, 1894. A. W. HARLAN.

Editor Dental Review:

While attending the Old Point meetings, it was mentioned to me about uniting the American and Southern Dental Associations, and the American appointed a committee to this effect. The Southern would have done so if the matter had been presented to it, but it had adjourned when the American convened.

I have been thinking over this matter a great deal, even long before this resolution for a conference was thought of. I am in hearty accord with Dr. Harlan's plans as set forth in his address as President of the American a few years ago. The plan was to have the country divided into quarter sections, N. E., N. W., S. E. and S. W., and let each of these sections have an annual meeting, all having the same form of rules for business, in fact all acting alike in a business way; and every four years have a general meeting in Washington where we could have a museum with space in the Smithsonian, and where a scientific work could be arranged for, also a system of clinics, if necessary.

Another plan was suggested, which was to form one national association under the name of the National Dental Association of America, and divide the country into four sections, according to Dr. Harlan's plan, and to have the National association to meet in rotation in each of these sections. This plan has one thing in its favor, and that is each section would get the benefit of the presence of the faithful leading men of the country. And yet the other plan would just as often bring all the active leading men together every four years. Just so long, Mr. Editor, as the American Association meets in the N. E. just so long will the necessity exist for the Southern, and it will call forth a Western association, for the same purpose that the Southern exists, to improve the section and give the mass of dentists in the Southern States opportunity to see things and learn things beyond the State meetings.

I hope this matter will receive the serious thought of the leaders of all sections and that Dr. Harlan's ideas will be carried out.

Yours, GEORGIA.

REVIEWS AND ABSTRACTS.

MANUAL OF OPERATIVE TECHNICS.

A PRACTICAL TREATISE ON THE ELEMENTS OF OPERATIVE DENTISTRY. BY THOMAS E. WEEKS, D. D. S., Professor of Operative Dentistry and Dental Anatomy in the College of Dentistry, Department of Medicine, University of Minnesota. Pp. 124. Published by H. D. Justi and Son, Chicago. 1894.

The readers of the DENTAL REVIEW are already familiar with the nature of this work, it having appeared in serial form in previous issues. Additional matter has been incorporated in the book in the form of a glossary, while a very complete index renders a reference to any phase of the subject a matter of convenience. The author has gone carefully over his work and has endeavored to say as much as seemed desirable on the subject in the shortest possible space. The object of the work is not only to instruct students, but also to serve in a measure as a guide for teachers of operative technics to follow. To those especially who have had little experience in technic teaching the work will be found invaluable.

A MANUAL OF DENTAL ANATOMY, HUMAN AND COMPARATIVE. By CHARLES S. TOMES, M. A., F. R. S. With 235 illustrations. Pp. 559. Fourth edition. P. Blakiston, Son & Co., publishers. Philadelphia: 1894.

This standard work is presented to us in the present edition in pleasing and substantial form. It is a work which to one interested in the subject reads like a romance, and it should be in the library of every student and dentist. The illustrations are excellent, with the necessary limitation that must always apply to engravings intended to represent the microscopical structure of tissues. The diagramatic nature of the work invariably invites a doubt in the mind of the reader as to the perfect accuracy of the representations, and in this age of photogravure it would seem desirable that illustrations of tissue structure be made by this process. The nomenclature in the chapter on "The Teeth of Man" strikes one as somewhat out of date in view of present reform along that line. The terms "eye teeth," "canine teeth," "wisdom teeth," etc., appear incongruous in a modern work on dental anatomy. But these minor defects detract very little from a book which exhibits so firm a grasp of the subject at large as does this one. No dentist can read and study such a work without being a broader man for it.

CHEMISTRY: GENERAL, MEDICAL AND PHARMACEUTICAL, INCLUDING THE CHEMISTRY OF THE U. S. PHARMACOPŒIA. A MANUAL ON THE GENERAL PRINCIPLES OF THE SCIENCE AND THEIR APPLICATIONS IN MEDICINE AND PHARMACY. By JOHN ATFIELD, F. R. S. Ph. D., F. I. C., F. C. S., etc. Fourteenth Edition, pp. 794. Published by Lea Brothers & Co. Philadelphia: 1894.

In the literature of chemistry Atfield has long since become classic. From the first edition in 1867 to the present the work has been constantly improved till now the result is a most substantial volume of nearly 800 pages, with several insets. This being an American edition and so recently issued it was a matter of some interest to note whether or not the author would adopt the reformed method of spelling chemical terms suggested by the American Association for the advancement of science in 1891. It is found that the old system has been followed, and in passing, it would seem that unless chemists generally deem it advisable to accept the change it cannot consistently come into general use by writers.

PAMPHLETS RECEIVED.

STOMATITIS NEUROTICA CHRONICA. By A. Jacobi, M. D., New York. Reprinted from the transactions of the Association of American Physicians, 1894.

TRANSACTIONS of the Illinois State Dental Society, at the thirtieth annual meeting held at Springfield, May 8 to 11, 1894. Pp. 210. H. D. Justi & Son, publishers, Chicago.

MEMORANDA.

The dental societies of Chicago have all gone faithfully to work after their holidays.

Prof. W. D. Miller, of Berlin, spent a few weeks in America during the summer, but did not get as far west as Chicago.

The colleges seem to be well patronized this session. So long as the material is good, "the more, the merrier," but we cannot refrain from admonishing those at the head of these institutions to guard well the entrance.

Are you in favor of amalgamating the Southern and American Dental Associations? This is a matter which calls for careful deliberation and a broad comprehension of existing conditions before any decisive step is taken.

Editor Kirk, of the *Dental Cosmos*, took a trip to Europe this summer in company with a congenial party of friends in the profession. There *are* some fortunate dental editors after all.

PROCEEDINGS OF THE MINNESOTA STATE DENTAL SOCIETY.

In the November number of the DENTAL REVIEW we purpose publishing the entire proceedings of this society at its recent meeting in September. The members of the profession in Minnesota are fully alive and up to date in their ideas, and we promise our readers a treat in the perusal of their latest utterances.

DINNER TO DR. W. G. A. BONWILL.

During Dr. Bonwill's recent visit in Chicago a few of his friends gave him an informal dinner at the Victoria Hotel. A very pleasant evening was spent. The following gentlemen were present: Drs. Harlan, Ottofy, Seymour, Wikoff, Case, Gardiner, Taggart, Fernandez, Brophy, Crouse, Davis, Royce, and Menges.

TRI-CITY DENTAL SOCIETY.

This society holds monthly meetings in one of the three following cities: Davenport, Iowa, and Moline and Rock Island, Illinois. The annual meeting was recently held and the following officers were elected for the ensuing year: President, Dr. L. W. Skidmore, Moline; Vice President, Dr. R. M. Pearce, Rock Island; Secretary, Dr. E. E. Williams, Davenport; Treasurer, Dr. H. G. Pape, Davenport. Drs. C. R. Baker and J. R. Kulp, were elected members of the executive committee.

THE ALUMNI NEWS.

The initial number of the above publication is just to hand. It is the organ of the Alumni Association of the Chicago College of Dental Surgery, and will be published quarterly. Its pages are to be filled principally with matter relating to the Alumni Association, and will be of especial interest to all graduates and friends of the college. The first issue is a credit to its promotors, and we bespeak for them success. The editor is Dr. G. E. Zinn, and the publisher, Dr. W. T. Reeves.

DELTA SIGMA DELTA JOURNAL.

The Delta Sigma Delta fraternity have just issued the first number of a quarterly to be devoted to the interests of the society. The profundity of its Greek title at first glance staggers the sensibility of an ordinary reviewer, but when the contents are examined the publication is found to be filled with delightful and interesting matter—more interesting, of course, to fraternity men than to others. Delta Sigma Delta has come to be a power in the profession, and what is more significant its power is always exerted for good. May the publication prosper.

THE AMERICAN STANDARD.

We are in receipt of the first four numbers of a monthly magazine bearing the above title. It is a magazine devoted to history and patriotism, and is conducted by Dr. B. J. Cigrand, well known in the dental profession. The initial numbers give promise of much for the future of this periodical. It fosters a laudable spirit, is clean, neat, sharp, and to the point. The general character of the contents may be judged by the fact that the following men have already contributed to its columns ; Melville W. Fuller, LL. D., the late Prof. Swing, Archbishop Ireland, Chauncy M. Depew, Rev. W. H. Thomas, etc., etc.

RESOLUTIONS ON THE DEATH OF DR. H. H. SILLIMAN.

WHEREAS, Death has taken from our midst, in full prime of life and usefulness, a talented and exemplary member of our profession, Dr. H. H. Silliman, Therefore, be it

Resolved, That in the death of Dr. Silliman our society has lost an active and useful member, and the profession at large a man who bid fair to reach the highest standard of excellence. He was a valued citizen, and as a friend faithful and true. In the presence of so sad a death it is meet that members of the First District Dental Society of Illinois take some formal action, evidencing their unaffected sorrow at the loss which we have sustained.

Resolved. By the members present, that we deeply deplore the death of Dr. H. H. Silliman, regarding it as a personal as well as a professional loss to us, to his large circle of friends and individually to the community.

Resolved, That a copy of this be transmitted to the family of the deceased, and a further copy be sent to the journals for publication.

W. J. ADAMS,
W. A. JOHNSTON,
F. J. RAYMOND.

ALUMINUM SOLDER.

The only solder for aluminum which has attained to any extensive use, and which may be said to be the most successful thus far invented, is that of Mr. Joseph Richards, of the Delaware Metal Refinery, Philadelphia. Mr Richards found that by adding a small percentage of *phosphorus* to the best solders hitherto used, they were invariably improved, the particular point of advantage being their increased ability to bite on the aluminum. The best alloy thus prepared contains zinc, tin, aluminum and phosphorus, the two first constituting the bulk of the alloy, and being united in their chemical equivalents as a true alloy. This solder can be used before the blowpipe or with a soldering iron. In the former case, a little silver can be added to it without making it too hard to melt, and giving it a better color. For use with the copper bolt, this solder leaves little to be desired. The surfaces to be united are first scraped clean, and then tinned with the solder itself by rubbing it on hard with the bolt. The prepared edges are then soldered together with ease, using a hot iron and no flux of any description. This solder has been adopted for over two years by the Swiss Aluminum Company, the largest manufacturers of aluminum, and by the largest makers of aluminum goods in America.

While nothing terrestrial can be said to be so good that no better could be wished, yet in view of the improvements in soldering aluminum made since 1890, it may reasonably be asserted that a satisfactory solution of the problem has been reached.—*The Aluminum World.*

DANGER IN COCAINE.

Though cocaine has been known as a valuable agent for some years, the number of so-called secondary or amorphous alkaloids remains yet a subject of doubt to chemists. There are known to be several, and recent researches on the part of Liebermann, Liebreich, and others, prove that one of these amorphous alkaloids, viz., iso-atropyl-cocaine, is a most violent cardiac poison. This alkaloid occurs in coca leaves in very minute quantity, as a rule, but some specimens contain far more than others; its separation is most difficult, and it enjoys the reputation of being the least easily detected of all the coca bases. Even if we were not positive that the secondary bases exhibited a pernicious effect, they must be looked upon as suspicious, and a cocaine demanded from which they are removed. As a matter of fact, we do know that the presence of even small quantities of these amorphous bases is responsible for untoward and seemingly inexplicable results that often follow upon the administration of supposedly pure cocaine preparations.

Recently the editor of the *Medical Age* learned of two apparently mysterious deaths which were in reality the result of the use of impure cocaine by dentists for its benumbing effect in the extraction of teeth—in both cases the drug was injected into the gum. In one instance death occurred within a few hours after the teeth were drawn; in the other the lady lingered for about thirty-six hours, and all the resources of the medical art were unable to stimulate a heart that had been fatally poisoned owing to a preponderance of iso-atropyl-cocaine.

Such facts as just cited should prove sufficient to put the practitioner on his guard and induce him to demand a cocaine that is free not only from secondary alkaloids, but from such inorganic substances as sodium, calcium, etc., that are necessarily employed in the process of manufacture.—*Medical Age.*

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

The 22d of September, 1894, was a red letter day in the history of the Odontological Society. One of its members, Dr. J. A. Swasey, invited the society to hold its September meeting at his summer residence, "Swasey villa," Buchanan, Michigan, and the invitation was accepted. On arrival of the party at Buchanan they were driven to the home of Dr. Swasey and entertained with a delightful dinner. The subject for discussion at this meeting was "Correct Diagnosis," and the host was the essayist. Those who know Dr. Swasey personally may easily imagine that he proceeded in his own characteristic manner to diagnose the case of every member present. Nor is it necessary to add that the diagnosis was correct. After adjournment a reception was tendered the members, and among those in attendance were the mayor of the town, the ex-mayor, the sheriff of the county, and all the town officials, besides prominent merchants and professional men of Buchanan. The citizens of the place magnanimously furnished an orchestra for the occasion, and it is safe to say that visitors were never more royally entertained. The next day's program included a trip up the beautiful St. Joe river in a palace steamer—the name of which has escaped us. The scenery along the banks of this river, to eyes that are wearied with walls of brick and mortar, is most refreshing. A ten-mile drive in the afternoon through as beautiful a country as ever lay spread to the vision of mortal man completed what will long remain in the minds of the members one of the most delightful trips in their memory. As the train started for Chicago it was voted by one and all that their host was one of a thousand, and that the citizens of Buchanan were all hosts. Dr. Swasey is more fortunate than the average dentist, in having his lines cast in such pleasant places. He is situated so that he may practice his profession six days in the week in Chicago, and on Saturday night he may jump on the train and in a few hours be sitting on the broad verandah at his country villa, listening to the chirping of the birds or the ceaseless roar of the St. Joe river as it leaps over the dam at Buchanan. The sentiment of the entire Odontological Society is that he may live long and prosper.

A DIALOGUE.

Parties to the Dialogue. { A Bacteriological Sceptic, and
A Representative Pathogenic Microbe.

Sceptic.—Ha! Mickey, thou thinkest thou hast the whole world on thy hip—go to!

Microbe.—"Mickey," didst thou say? Darest thou sneer at me? Wot'st not I am the pet of men with bulging brows?

Scep.—Dreamers, all; mere bookish hermits, they.

Mic.—Most dearly shalt thou pay for thy audacity—"I am little, but, oh, my!"

Scep.—Thee, and all thy armies, I defy.

Mic.—But let me in, and thou shalt change thy tune.

Scep.—Already, I am *full* of germs.

Mic.—They're not my kind. I do not fellowship with *natives* of thy inner parts.

Scep.—Canst thou not lick them then, and drive them out?

Mic.—'T were easy done, if foraging were good.

Scep.—How can I make it good?

Mic.—Lower thy vitality by living wrong, or take a cold, or wound thyself, or be thou phthisical of habitus.

Scep.—I see; so thou canst *make* me sick, if *first* I *shall* be sick?

Mic.—Avant with thy mere logic—dost not know my champions declare me *prime* in pathologic states?

Scep.—Ah, so they do, but how canst thou be prime when malady incipient must ever be condition precedent to occupancy by thy tribes?

Mic.—Because, er—that is, just because.

Scep.—Thou reasonest well.

Mic.—At any rate, I do get in my work when—I do get in my work.

Scep.—Most clear, and most specific, that, but tell me Mick, since thou art not initial in disease, as we have seen, what part dost thou then play?

Mic.—We differentiate, and make determinate all maladies, and we do hedge the victim round with mortal possibility.

Scep.—So then, a death, unless from accident or from senility, could never be but for thy kind. This being so, what then would follow if thy tribes were banished in an instant from the earth?

Mic.—Why then ther'd be no more microbes, either for health or for disease, and thou wouldst die for want of those that give thee life, and couldst *not* die for want of those that kill.

Scep.—"Ah, there!"

Mic.—"Ah" thy fill, 't were better *awe!*

Scep.—Initial morbidness—what purpose in the scheme of being would it serve if thou wert gone?

Mic.—Since occupation, by my kind, bears to initial wrong the same relation that response bears unto question, true, consistent Nature would, perforce, abolish this *first* divergence for normality.

Scep.—Thy head is level after all; thy occupation being *answer* physical to question physical, not *question* physical to answer physical, the microbe is *sequential* to disease, not *causative* thereof. Jim dandy, thou, to pose as Primus in the Realm Pathologic! But after all thou serv'st an end between the teeter-totter of Vitality and Death. And thou hast done much good in emphasizing what is next to Godliness. Asepsis—that which is preventive of disease is to *the same degree* restorative of health. Thou hast not lived in vain, "teenty" as thou art. Ta-ta. —*The Eclectic Medical Gleaner.*

PRESENTATION OF A BRONZE MEDALLION OF THE LATE DR. W. W. ALLPORT, TO THE CHCAGO COLLEGE OF DENTAL SURGERY.

At the opening exercises of the Chicago College of Dental Surgery, October 2, 1894, a bronze medallion likeness of the late Dr. W. W. Allport, was presented to the college by the family of the deceased. The presentation address was made by Prof. DeLaskie Miller, M. D., as follows:

Mr. President, Gentlemen of the Faculty, Ladies and Gentlemen:

I have been deputed by those who were nearest to the original to present this bronze medallion of the late Dr. W. W. Allport, to the Chicago College of Dental Surgery. Before doing so I desire to say that I knew Dr. Allport well. My acquaintance with him began soon after he settled in this city. This acquaintance early ripened into a friendship which continued unabated during all the years he remained with us, and I have only pleasant memories of his uniform courtesy and genial disposition.

In his profession Dr. Allport was a leader, ever active in efforts to improve his art and dignify the calling in public estimation. He would not entertain the thought that dentistry must remain an art merely. He early realized that the accomplished dentist must become learned in many branches of medical science, and he was among the first to insist on the adoption of a curriculum which should include those essential branches. Then followed the requirements that each candidate before being admitted to practice, should demonstrate his capability by sustaining a satisfactory examination in all the branches included in the prescribed course. Dr. Allport's personal influence was an important factor in raising dentistry to the elevated plane among the learned professions which it occupies at the present time.

Dr. Allport was an expert operator, and when I say he was a skillful dentist I would imply that he possessed the learning and knowledge acquired only by a study of all the collateral branches of science which relate in any way to dentistry. Thus equipped he was equal to any emergency, and did often devise new methods in difficult cases which assured success. And many improvements originated by him were soon adopted in practice by members of the profession.

If I rightly interpret Dr. Allport's career, the forces which led to his great popularity as a dentist and secured for him a phenomenal success, were based on his high ideal, to do perfect work and be satisfied with nothing less. This required close attention—all his skill and knowledge—and superior technique in each and every case which came under his management, and this he gave.

The demise of Dr. Allport removed from his colleagues an able counsellor and an efficient co-worker—and in that higher though smaller circle—the home, it has left a vacant place.

> "Those we love, leave more vacant places,
> Every year.
> Everywhere sad eyes meet us,
> In the evening shades they greet us,
> And to come to them entreat us,
> Every year."

Mr. President, it gives me pleasure, sir, to present this artistic and faithful portrait to the college through you. It is eminently proper to place Dr. Allport's portrait in a conspicuous place that the features may ever remain bright in the memory of those who knew and respected him. And that the young men who will annually leave these halls to begin their life duties may receive an inspiration to lofty aims and good works from his life and services. Inscribe under it this sentiment:

In his professional work he ever sought his ideal, and never pronounced a work finished till he could see it perfect.

RESPONSE BY PROF. TRUMAN W. BROPHY, M. D., D. D. S., DEAN OF THE FACULTY.

Prof. Miller:

The Board of Directors and the Faculty of the Chicago College of Dental Surgery sincerely thank you, the representative on this occasion of his family, for this life-like medallion, cast in enduring bronze, of the late Dr. W. W. Allport.

There is no place, in my judgment, more appropriate for the preservation of a facsimile of his features than within the walls of this great temple of professional learning, for Dr. Allport was one of the founders of this institution; he was its first professor of operative dentistry. Dr. Allport believed in the policy adopted and pursued by this college; he believed it would yield a tremendous influence in elevating the dental profession. When clouds of darkness surrounded it, when influences were in operation to effect its destruction, Dr. Allport was our most staunch and trusted friend and able advisor. Through his wise counsel, obscurity gave way to a flood of glorious sunshine and unobstructed prosperity. He was a tower of strength in the profession. His name was coextensive with the practice of dentistry. No man was his superior as a dental operator. No dentist held more firmly the confidence and respect of the best element of society. Young men, those of you who contemplate entering the ranks of the dental profession, compare your opportunities for acquiring knowledge with those, described this evening by Dr. Miller, which surrounded Dr. Allport's early manhood. Observe the professional distinction which he attained under adverse circumstances. Will you, gentlemen, with every facility for advancement before you known to the science and art of dentistry, attain distinction as he did? As you enter this lecture room from time to time and look at this medallion of Dr. Allport, I trust you will, each of you, resolve to emulate his example.

Prof. Miller, we thank you for your presence this evening and for the words you have spoken, and through you we desire to express to the family of Dr. Allport our appreciation of their gift. It will be preserved with care and I trust serve as an incentive to the young men who may enter the portals of this college, to use their utmost efforts in the acquisition of the highest degree of professional skill.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

PRACTICAL DENTAL EDUCATION.*

BY PROF. L. L. SKELTON, M. D., CHICAGO, ILL.

Ladies and Gentlemen :—It is said that at the present day the successful man is the man of one idea. From a financial standpoint this is largely true ; the man who knows one thing and knows it well, is the one who receives the greatest compensation.

The same law seems to hold good in modern civilization as obtains in the individual economy. The higher the specialization of function, the less the number and kind. An amœba will eat and move, and breathe with one apparatus ; but the moment his breathing organ becomes perfected, that moment it must cease to be the organ of digestion and movement. This specialization has been carried to such an extent in dental matters that it has subdivided the field of professional work and instead of a specialty, which is the outgrowth of the broader field of general work, it seeks to be developed without a knowledge of the general. This idea is embodied in the commonly expressed wish of the student for only that part of an education which bears directly on the line of work he expects to follow, and a total disregard of the allied and fundamental branches. He judges superficially—sees only the perfected skill and the applied science, and asks to be trained in the application before he knows the principles. It is well he does not appreciate the difficulties of his journey or he would often be deterred from making the attempt.

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*Opening address, Chicago College of Dental Surgery, October 2, 1894.

Every student who comes to this college comes, I believe, as the result of one idea. It matters not whether the exciting cause of his presence here has been his environment, the paternal mandate, "thou shall go to college," the desire to have a profession, to obtain wealth or distinction, or as the result of a long cherished plan and hard work necessary to obtain adequate means—the idea has been the same, to obtain a practical dental education. I wish to call your attention, not so much to dental education—the present methods of instruction or means for its perfection, as to what constitutes a practical dental education.

To-day is heard on every hand the cry, "I want the practical part of an education." The old idea that a man must be drilled by a long course in Greek and Hebrew roots has given way, at least in dentistry, to the demand to get the necessary discipline by drilling the live roots of teeth ; and it is true that sufficient discipline of mind and thought may be furnished by a study of the necessary prerequisites to the practice of dentistry.

The demand is for an education which has the greatest commercial value—that which can be turned readily into gold. The principal misconception of what a practical education consists, arises from a confusion of the term practical with manual or technical, and the use of the word theory to indicate something to be classed among the adornments of the scholar.

Let me state that as a general proposition, a practical dental education is necessarily composed of two parts. First, the theory. Second, the manual in its broad sense. Neither can do without the other, and a neglect of either is fraught with equal disadvantages. The purely theoretical man, when confronted with a particular problem of malformation or disease will fail, not less surely than will the skilled manipulator who knows not the underlying pathological condition.

It is common for the student to complain that he must spend some time during the first and second years of his course, on subjects the connection of which to practical dentistry he is wholly unable to appreciate. What does he care about the microscopical structure of the pleura, the femur, or the vagus nerve, or the anatomy of the peritoneum, or physiology of the kidney, or chemistry of the bile ? He wants practical dentistry. But wait. Turn with me to two practicing dentists. I see a poor patient suffering from a disease of the mouth applying to one. He notices the appearances—sees something a little wrong at the side of the tongue—fills a small cavity in a remote tooth and the patient departs. That little something wrong means nothing to him.

The patient happens to consult another practitioner. He likewise examines the patient's mouth. He also notices the something wrong, but what a different story it tells him—the story of the necessity of immediate relief or the ultimate death of the patient. What was the difference in the dentists? One a good workman but without adequate knowledge of fundamental branches. He knew not the natural history of disease or pathology. Which, let me ask, was the practical dentist? The patient could tell you, but perhaps when it was too late to benefit him.

Dentistry is both a science and an art. The science of dentistry is not essentially different from the science of medicine. Both deal with disordered bodies. Dentistry may be regarded as a specialty under the broad term medicine. Why not then give the dental student the same drill in fundamental branches that the medical student receives? The ophthalmologist does not complain that he treats only eyes, therefore needs not the more general medical education, nor the neurologist, that he treats only nervous disorders and does not need surgical pathology.

The art of dentistry is widely different from the art of medicine, and this is what makes the enormous difference between the two professions.

It is to the credit of American dentistry, that it has so perfected itself as to give it an international reputation, and the severest critics across the water admit the superiority of the American dental workmen. Of course, they could find a weak spot if one existed and they say it does exist in the diagnosis and appreciation of underlying pathological conditions. It is the pathology which makes your calling a profession and not a trade. But for the appreciation of the pathological, you must know the normal, the physiological, and you cannot understand the working of a vital machine without a knowledge of its construction, therefore the anatomy, histology and chemistry. The pathology of a necrosed maxilla is not different from that of the femur, nor is the inflammation of a dental membrane different from that of an inflamed pleura. Do pathological bacteria ply their deadly work differently in the mouth than in other parts of the body? Or is pain reflected from a carious tooth subject to different physiological laws than apply to painful irritations in general?

Frequently the student will stop in his study of a subject apparently irrelevant to dentistry, and wonder why all this hard work on something he afterward will not refer to. Let me answer, that a sufficient knowledge of normal function can be the only landmark whereby you may know where the abnormal begins—that a knowledge of the abnormal in all its details is the only hope whereby you will be able to reason correctly concerning therapeutic means, and gives the only basis of correct judgment which is the highest and most difficult attainment. Correct judgment must rest on adequate knowledge—adequate knowledge of the individual and the vital laws of his economy—adequate knowledge of the particular part concerned and knowledge of the natural history of the disease process, then only can a correct application of therapeutic means be obtained. This it is that marks the different degree of success among practitioners, and requires for its perfection the deepest study and longest experience.

In so far as dentistry is more than a mechanical art, so far must the dental education be more than manual training. If, also the dental education is confined to the discussion of oral troubles, entirely local, then all the local manifestations of general diseases are barred out and the dentist is handicapped where he should show his greatest strength. A man of such a qualification would not know much of the liver, nor of intestinal, and lithæmic diseases on which the successful treatment of the teeth and mouth might turn. A knowledge however accurate of the parts involved, does not qualify one to make an intelligent prognosis, to decide on the advisability of an operation or to treat judiciously even such diseases as consist mainly in pathological changes in the particular part.

Nor can a student of local disease appreciate the large and apparently obscure class of diseases of reflex manifestation without a thorough study of the physiological action and of the way subjective symptoms are referred to a particular part. It is in this line that much of the thought of the progressive members of the profession is being directed—the appreciation of the remote causes of local disease and their removal, and with the increasing competition the successful dentist will be the one who studies the underlying morbid state and works accordingly. He too is the practical dentist.

Whether it is true or not that the uric acid diathesis, a general lithæmia, is the cause of certain concretions on the teeth, it is true that such a condition will cause the most persistent and excruciating toothache when the teeth are all in apparent good order. No amount of attention to the teeth would relieve the condition and your patient infers that there is one kind of toothache of which you are not master. Every specialist is liable to fall into the error of reasoning that because he sees certain results follow certain causes, all such results are from such causes. It is for this reason that the specialist should be something more than the general, and not a part of the general. In the best sense a dentist is a general medical man plus his dentistry and not as is too frequently the case something else and considerably less than a physician. In what I have said I by no means imply that a dentist ought to know as much of medicine as the general practitioner. Medicine like dentistry is a science and an art. Of the art of medicine the dentist is as ignorant as the physician is ignorant of the art of dentistry. They have a common ground in the fundamental branches.

The dentist who knows most, takes the broadest view of vital problems, reasons for himself and makes his own application of principles to particular cases, will soon convince his patients of his ability and become the most practical man; but it must not be inferred that the laity is a correct judge of a practitioner's ability before they have seen his ability demonstrated or that they will rely on his judgment at first, nor does the fact that a patient is educated in some one line imply that he will reason correctly on dental subjects. The devout astronomer, who could not possibly be induced by the visionary star-gazer, to believe that the moon is made of green cheese, may readily believe in painless extraction before he has tried it, and the theologian who could pick flaws in the sophistries of Mohammed or Buddha will often be found to be misled by the misrepresentations of the quack and impostor in dental matters. But the dentist who intends to practice in one place and among an ever-extending list of acquaintances will find that he must give his clients the result of his best judgment and see to it that that judgment is as correct as possible. Such a judgment can only come from real knowledge. This has been the experience of the best practitioners and to-day the most practical men are men of deepest study and broadest views.

I visited the private study of one of the most eminent men of this city, known as a successful, quick working, practical man. If one of you had seen him at work on case after case and noticed the apparent ease of his work, his success, and last but not least the size of his fee, I doubt not but you could have said: "That is the kind of a practical dentist I would like to be." But in his private study what did I find? This same man hard at work on a pathological problem with his anatomy and physiology close at hand. He was drawing a practical, logical working deduction from his elementary studies whereby he could manage a difficult disease.

When your preceptors ask that you take special care to learn the new methods of managing diseased conditions and the improved appliances, it is not only necessary for you to give the mechanical part but it is of the greatest importance to understand the pathology; otherwise you have an efficient means for securing a desired end and no adequate conception of that for which it is used. You know what to do with pus but do not know where to find it or when it is present.

I do not care at this time to discuss the methods now employed to furnish this practical education. Our college curriculum I believe to be the best under present circumstances—that it will remain as it is I do not believe. It has been of rapid growth, governed by what was feasible and not by the ideal. It has a higher purpose than to give a D. D. S., *i. e.* to give the theoretical and technical training without speculation which shall make the most useful men. Every year sees an improvement. But let me say in regard to laboratory work that this is the proper way of teaching theory. We naturally associate laboratory work with manual training, but one learns his theory best and remembers it when learned in the laboratory, and it is only a lack of time of all concerned that makes it necessary for the student to be told didactically what he could best learn experimentally. One thing more—most of you have noticed the marked difference in the individual responsibility of the student in the literary and in the professional schools. Both schools have a minimum requirement for graduation, but the matter of self-interest fixes the responsibity of obtaining the greatest good from the course on the individual student in the professional school, and not on the teacher.

What business man when taking stock in a commercial enterprise on the interest of which he expects to live in after years, would consent to take the least amount the institution would allow? No more should the dental student be content to put away in his cerebral bank, the least amount of knowledge on which the college will grant a diploma.

Therefore, gentlemen, let not your idea of a practical education be bounded by a narrow circle of local mechanical work. If your diploma gives you the right to prescribe for an oral trouble you must qualify for its responsibilities. If you are permitted by virtue of your license to practice dental surgery, then must you know surgical principles and all that they imply. This is the dentistry of the future, and he who intends to practice the profession must be well grounded in the fundamental branches while in college, in order to make the intelligent application necessary for the success of the practical dentist.

OPENING ADDRESS.*

BY LOUIS OTTOFY, D. D. S., CHICAGO, ILL.

Ladies and Gentlemen : On this occasion, the inaugural of the ninth annual session of the American College of Dental Surgery, it is my fortune to extend to you, on part of the faculty and the management of the college, a cordial welcome. This privilege, I assure you, is a pleasant one. There are among those here, many who have seen these college walls before, and they remind us of the work done in the past. We welcome each and every former student of this college with open hearts, and thank them here for the confidence which they emphasize by their return. None the less warm is our welcome to the large number of young men and women who first enter upon their work in this college to-day; and we trust that the majority of them may find it to their interest to continue that work with us, until that long looked for and hoped for day when they may launch upon their professional career. A warm and hearty welcome to you all. The guest who is within our gates to-night, perchance a mother with fond hopes for the future of her son, a wife who is already treading along life's rugged pathway with a husband, and while it is said that "Love seldom haunts the breast where learning lies," it may even be a sweetheart whose hopes are entwined with those of some student here ; a hearty welcome to you, as well. Your interest in those who have entered the college portals is manifested by your presence, and none are more grateful for that than the faculty into whose care, for the time being, these students have been entrusted. A welcome to the alumni here present, who show an appreciative interest in their Alma Mater, and who give encouragement to those whom they have preceded.

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*Read before the classes of the American College of Dental Surgery, Chicago, October 4, 1894.

At no period in the history of this institution could any one have been present on a more auspicious occasion, for the growth of the college has been phenomenal, and it ranks to-day as one of the leading institutions of learning in our profession in this country. Year after year it has steadfastly progressed, its course of study has been extended, its faculty improved, its accommodations enlarged to meet the constantly increasing demands, and to-day the college is well equipped for the session about to open. I am safe in making the statement that any young man or woman who is now enrolled as a student of this college has made no mistake ; on the contrary, he has exhibited the exercise of good judgment, and if each will do his part, the end cannot but be crowned with success. You are placed here in a position where the best of education will be at your command, and if you take advantage of the opportunities, you will in the course of time be successful men and women ; a credit to your college, to the profession, and useful in the community where your lot may be cast.

You must bear in mind, however, that obligations are now assumed by you which must be promptly met if you hope that success shall be your reward. In my estimation, no higher privilege is granted to us during a lifetime, but especially during our period of youth, than that which has for its ultimate object an education. Broadening the mind, acquiring knowledge, and enlarging the culture, are rights and privileges of the student. They are among the most sacred and glorious of our inheritances. While I fully appreciate the fact that you are here entering upon a course of study with the avowed purpose of obtaining a dental education, and that you are presumed to know your duty here, I also recognize the fact that there may be those among you who are entering from other walks of life into an atmosphere that may be wholly unfamiliar. The professional man's life, while it is a life of business, has many features not in common with what are usually known as business methods. Yet, I wish you to treat your college life as a business proposition, for you are here investing a hundred or more of dollars annually, and are (or should be) devoting the greater portion of each year during a highly productive period of your life to the acquirement of an education. I assure you that you cannot devote one moment in excess of what will prove to your best interests in the future. Remember the threadbare lines which tell us that

"Learning by study must be won;
'Twas never entailed from sire to son."

And also that your period of student life runs concurrently with your own individual existence, that the moments which are lost or misused during the coming session can never be regained; they fly upon wings whose swiftness is incomprehensible. There is nothing to be done here that you can put off until to-morrow. "The means * * * must be embraced, and not neglected." I admonish you to attend closely and faithfully to the work in hand, always remembering that no one can take advantage of the college, every lecture missed cheats only yourself. Do not attempt to attend just enough to pass the absolute minimum requirements, but see how near you can approach the point of maximum attendance. If you are engaged in the practice of dentistry, the evil results of a month or year of negligence, might be counteracted by industry, application and self-sacrifice, but an hour lost here this winter, is lost forever. If you attempt to crowd it into next year's work, you will be constantly confronted with conflicting conditions, and so on throughout your college life. Hence I cannot too strongly urge you to complete in a thorough manner, each year's work during the time assigned for it.

This naturally leads me to mention the necessity of punctuality. Be punctual in attending all the work in the laboratories, the operating rooms and the lecture halls. Do not make the failure of a teacher or a student an excuse for your own absence or tardiness. Practice the habit of always being ready for whatever the inevitable circumstances may bring about. It is seldom that a winter's work is accomplished without sickness or even death entering, and hence, with our most sanguine desire for regularity in the work of the college, occasionally unforeseen changes compel modifications. You may rest assured that no teacher in this institution will neglect his duty, or disregard your rights.

There are many things that might be said on an occasion like this; advice, as you are well aware, is more easily given than followed, and I do not wish to fall into the usual habit of burdening you with a list of "don'ts," but I appeal to your manhood and womanhood, that you shall do the right thing at the proper time; show respectful regard for your teachers; attend strictly to business while you are with us; ask no excuses from lectures, but attend them; take care of your physical bodies that your mind may be fresh and clear and your hand steady; be honest with each other and with your teachers; never absent yourself from a quizz or an examination, even though you feel that you cannot answer a single question that may be propounded. An effort and failure is more worthy than no effort at all. In a word, deport yourselves as ladies and gentlemen, and no one can find fault with your record as students.

One subject to which I wish to direct your special attention, relates to the observance of the laws of the State, while you are students in this college. To those of you who may not be familiar with the subject, I wish to say that we have a statute which regulates the practice of dentistry in this State, and that we expect every student to comply with that statute in good faith. We do not wish that any one should evade it, because, forsooth, they can violate it without discovery or prosecution. That law permits no one to practice unless he has received a license from the State Board of Dental Examiners, either on examination or on presentation of a diploma. The college will furnish students with all the clinical operative work that they can do. Note that the dental college is not the place to get practice, that must be secured after graduation; while in college you will be taught how to practice, and how to do your work, but the time is too short to give a student an opportunity to spend his time in putting into extensive practice what he has learned. You must remember that there is a large amount of theoretical work that must also be done, and if you spend your time practicing dentistry, you must neglect some branch or branches which are designed to make you more thorough and competent practitioners. Keep within the law, and set an example for those who follow you, and whose practice may prove exceedingly obnoxious to you in after years.

In closing, it seems hardly necessary, yet it is proper, to call your attention to your private life and conduct while in the city. Chicago is one of the principal cities of the world; it is a magnificent example of industry and enterprise, but like all large cities it has its share of wickedness and corruption. Let not the city and its life contaminate your private character ; close application to your work is the best safeguard; you should have no time for idleness ; idleness is the key that unlocks the door of sin. Be busy, be constantly occupied, enjoy the innocent and harmless sport of students, for sport and reasonable wholesome pleasure is as much a necessity as food. If you are a stranger in the city, and wish to visit places of amusement, but are not certain of their character, ask any one of your teachers for information. Cultivate friendships among yourselves principally; your work is common to you all, and you can find enough to interest yourselves. It will not be long before you will have discovered that some one of you is a pretty good clown, another endowed with a good voice and knows all the catchy airs, and so on all through the list of those harmless and innocent amusements of a student's experience that often leave as indelible a mark on memory as any other incident connected with college life.

Use then your time to the best advantage, for the winter will be gone ere you or we realize it, and when the time comes for you finally to part from us, may our hearts be linked in the brotherhood of professional friendship, that you with us may in common elevate the dental standard ; may there be formed here among us lifelong friendships, and if past experience is a prophet of future events, there may be formed such friendships that may lead some of you to part with

"* * * some thoughts you utter not,
Deep treasured in your inmost heart,
Ne'er revealed, and ne'er forgot."

SOME THOUGHTS ABOUT THE FIRST PERMANENT MOLAR.*

BY H. A. PALMER, D. D. S., JANESVILLE, WIS.

Some years ago I obtained a copy of the August *Cosmos* for '89 which contained an illustrated article upon the development of the teeth by Dr. Bogue, of New York, which set me to studying and watching the first permament molar. That study has led me to believe that this tooth is the most important, and the worst treated of any in the mouth. Parents hold more wrong ideas about it than about all the other teeth combined.

It is the largest tooth in the series, and in outline is the most perfect. In structure it is generally inferior to the others of the same mouth, being less able to withstand the ravages of disease, and hence is more often extracted than any other. Dr. Taft says that thirty-seven per cent of all decayed teeth are first molars. Tables given by Tomes, Hitchcock and Magitot, showed that over twenty-five per cent of 35,000 carious teeth were first molars.

If we but stop to think a moment, we shall see that there are several reasons why this tooth is of an inferior structure. It is growing and erupts during the time when the whole system of the child is demanding an extraordinary amount of support. There is only so much nutrient matter in the system at one time. The appetite of the average child is almost constantly calling for support for all parts of the body, and of course the first molar can only receive its share. Its neighbors are all demanding nourishment and can only be supplied at the detriment of the first molar. All around it are tissues that are irritated and inflamed by every act of mastication which causes the child to avoid using that part of the mouth, and thus cheats the tooth of its rightful exercise.

If parents can be made to see the importance of keeping this tooth in a live and healthy condition until this critical period is past, and it has a chance to solidify, the chances are that the child will not only be spared a great deal of pain and trouble, but will positively be benefited in many ways.

But why single out this tooth from all the others? Because of its great importance to its possessor. Dr. E. J. Wetzel, of Germany, says, "Physiologically the first molar is the most useful tooth in the whole arch, and presents the largest area of crown surface, and is situated in a position where mastication is greatest and is admirably adapted to bear strain."

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*Read before the Wisconsin State Dental Society, July, 1894.

Dr. Black says, "We owe more to parents and their children in an educational way, with this tooth than with any other, that we may treat it before it is destroyed."

It is not only of great importance to the child because it is so liable to decay, but because of its position in the arch. It is situated just where the force of mastication is greatest, and thus assists the individual most in his trituration of food. Its position in relation to the form of the features is of the utmost importance.

Nearly all of the elongation of the jaw is from the second temporary molar backward. Now it is reasonable to conclude that if the first molar is allowed to decay and be extracted in early life, that the jaw will not be as thoroughly developed as it would be if the tooth was there to hold its place and keep the others in position during the development of the jaw.

If the first molar is extracted, the second will almost invariably tip forward into the place of the first, and thus not only arrest development of the jaw, but cause an irregularity which will be a great hindrance to mastication, as well as cause a marked change in the form of the features. Dr. Talbot say that "the habit of extracting the first adult molar during the past forty years has done more to cause arrest of development of the alveolar ridge, than any other one thing," and I think we can also safely say that nothing in nature, or in the work of dentists, has caused so many irregularities, as has the extracting of this tooth.

Dr. Conner, in the December *Items* of '92, says that the change of jaw takes place because the muscles draw the anterior part of the jaw back to the second molar, instead of the latter moving forward into the place of the first, but notwithstanding this assertion it is a fact that the second molar tips forward into an irregular position and not only causes an irregularity at that point, but so alters the articulation that the anterior teeth are forced out of position and the whole appearance of the face changed. There will not only be a sinking in of the cheek, but ofttimes an overlapping of the incisors or a crowding out of the cuspid as well.

Again, it is important that the first molar be saved, for the occlusion of the jaws comes upon these teeth during the eruption of all the permanent teeth anterior to them, and if the molar is gone, the other teeth will not erupt as fully as they would if the molars were in place to keep them from occluding too soon; consequently the face is very materially changed in its length. A shortened bite causes a great difference in the roundness of the features.

A tooth tipped out of position may cause a great irritation of the gums and surrounding tissues, and thus lead to other complications or troubles.

The lower arch may be narrowed or caused to become misshapen if the upper molar is extracted and the occlusion becomes abnormal. An irregularity which will make a great difference in the facial expression, may be caused by extracting one or both molars on a side, and leaving those upon the other side. The child's face may become something like the domestic relations of certain households— rather one-sided. The deciduous molars ought also to be retained the proper length of time, or this first molar may drift into their place and thus cause trouble. Dr. Dwinnelle reports a first molar that had drifted up to the cuspid.

Having now considered its construction, environment and importance, with the unhappy results of removal, let us suggest that it is our duty as dentists to try to impress upon the minds of our patients, the great importance of preserving these teeth.

I do not believe that we will be breaking or even bending the "code," if we use all of our influence whenever possible, to convince people of the necessity of caring for their children's molars. In our conversation outside of the office, we can often say a word about this tooth, without making ourselves tiresome or in any way giving offense. The majority of people believe it to be a deciduous tooth which must be extracted. By telling them the truth we may often save a great deal of trouble for the child, and benefit ourselves as well. Get the good will of the child by doing him a favor, and you have got the whole family.

Let us in every case possible, save the first permanent molar *alive* if we can ; but if this is not possible, devitalize it and fill. Thus we may keep the arch in as nearly a normal condition as possible, and the men and women of the future will rise up and call us blessed.

DENTAL EDUCATION OF THE PUBLIC.*

By LOUIS J. STEPHAN, D. D. S., MILWAUKEE, WIS.

The propriety and desirability of educating the public with reference to personal, house, neighborhood, city, State and national sanitation, has come to be recognized as essential to the national health. The medical profession has earnestly sought to convince the public of the value of obedience to hygienic laws and to secure to the people at large the benefit of sanitary science. To some small extent these efforts have been appreciated, as the evidence has been presented of the arrest of epidemics and the prevention of the spread of infectious diseases.

But the vast importance of the subject is not yet adequately comprehended by the general public. Sanitation, hygiene, prophylaxis, the laws of health, have been the texts of innumerable essays for the benefit of the community. Treatises without number have been written and published on the hygiene of the various organs of the body ; on the hygiene of age and occupation : on the hygiene of the dwelling, the school, the factory ; on dress, diet, sleep, rest, work and overwork ; on ventilation, drainage, disinfection, adulteration of food and water supplies ; on the care of the sick and aid in emergencies; on the summer and its diseases, the winter and its dangers, preventable diseases, the art of nursing, etc. All of these are intended and calculated to diffuse as widely as possible a knowledge of the elementary facts of preventive medicine, and the bearings and applications of researches in every branch of medical and hygienic science.

Notwithstanding these labored and persistent efforts, it is marvelous what little interest comparatively is evinced by the public in whose behalf they are put forth. Even among the well to do classes, those of more than average general intelligence, how little is known concerning the physiology of the human body, the location and function of important organs, the circulation of the blood, respiration, digestion, assimilation, etc. What wonder, then, that there is so little known of the mouth and teeth—their development, anatomy, periods and order of eruption, the relation of the first permanent molars to the deciduous teeth, the shedding of the temporary and eruption of the permanent teeth, the nutrition of the teeth, the nervous, regional and systemic relations, the care of the teeth and the hygiene of the mouth. There can be no question as to the importance of a wide diffusion of information in regard to these matters, and of an effort to awaken a general interest in the prevention and arrest of decay and loss of the teeth.

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*Read before the Wisconsin State Dental Society, July, 1894.

If, as has been said, the real groundwork of national health is the education of the masses, so an intelligent comprehension of the varied functions of the mouth and teeth, a better appreciation of the causes of deterioration and of the means by which it may be counteracted, is essential as the groundwork of a much needed improvement in the dentures of mankind. Dental colleges may multiply and each recurring year send out their hosts of graduates, legislatures may pass laws regulating the practice of dentistry, and thousands of operators may be kept busy in the work of repair, and still the deterioration will go on, and a vast amount of preventable disease will make its ravages. The remedy is the education of the people. They must be made to realize the priceless value of their dental organs. Fathers, mothers, and children must be made to understand that neglect which involves the loss of teeth is inexcusable and suicidal. How to disseminate such knowledge is a problem which may well engage the attention of dental organizations.

Has the profession anything to fear from the results of any change in this regard? Would it in any way injure them? Not at all. I apprehend quite the reverse would be true. But the fact of this widespread indifference remains; why is it? People in general are sufficiently interested in that which pertains to their own personal advantage; then why so little thought given to so important a matter, which when properly attended to, affords so much pleasure and satisfaction, but when neglected entails so much discomfort and misery? The answer is given in one word—ignorance. Why not to some extent, make it a matter of popular education? Our temperance reformers, humane societies, etc., hope to accomplish much by teaching in the public schools. Let us have something similar whereby the elementary principles of dental hygiene may be taught. Does the profession realize its responsibility as being the authority upon the subject when it allows dentistry to remain one of the most obscure subjects in the current literature of our time? Its own exclusive literature is technical and scientific, and does not affect the people. Should it not be popularized as well as the other arts and sciences?

So long as there is no concerted effort in this respect, frauds will continue to thrive; rubber plates and cheap fees will control the public mind, and teeth will be extracted by the million that should be saved by reputable dentists. The present tendency of the people to flock to places where extraction is the rule makes it easier for those about entering the profession to run a slaughter-house business, and degrade the profession, than to conduct a reputable practice. It is our duty as a profession to prevent unnecessary suffering, it is our interest to increase the general demand for dental services, it is our prerogative to elevate the standard of dentistry, and it will add to the dignity of the profession to display its learning. If we crave full recognition from any profession or any class, we must assert our abilities aggressively. Dental advancement scientifically has been so rapid that the mind of the profession has been engrossed with the science alone. Dentistry has been such a precocious infant that it has not had time to develop all the utility possible, or become as serviceable as could be desired. If the salvation of teeth were proclaimed as widely as the salvation of souls, it would be productive of a proportionate amount of happiness.

What the people know, they have learned by force of circumstances. The erroneous impressions that are prevalent are the result of depending almost entirely upon the ancient custom of verbal transmission. This would do for savages like the North American Indians, who had no other means of imparting knowledge or even historical events. But because we take a pride in the fact that dentistry has been developed in America shall we allow it to be justly criticised as adhering too closely to American customs? When it is remembered that by virtue of an act of the Municipal Council of Paris, in 1881, the children of the public schools of that city have their teeth enamined twice a year, we should not forget that we are behind the age as projectors.

If all who require the services of a dentist should apply for relief in an intelligent manner, there would not be dentists enough to attend to them. The colleges and dental depots would rival one another in the quality and quantity of their productions. Dentists could aspire to something more than competency, and there would be a dental millennium. The patrons of dentistry need enlightenment, so they will come to us for advice, instead of giving us directions. And when they are informed as well as we would like them to be, the profession will rise to its just and proper emminence.

With the hope of presenting the subject more logically I have endeavored to classify it as follows :

Firstly. That the education of the masses can best be attained by the introduction into the studies of the public school certain fundamental principles of dentistry, bringing into prominence the oral cavity as the beginning of the alimentary canal and its relation thereto. It is there that instruction of the young is effected in a simple way and by the most approved methods.

These impressions should be made in youth, which is the most effective period of life, on the principle that it is hard to "teach an old dog new tricks," to turn a well-rooted train of thought, or break off an established habit. "As the twig is bent the tree's inclined," is as applicable to this subject as to any other. Proper instruction would supply knowledge of lasting benefit, the importance of which the public does not realize, from the fact that it is almost totally ignorant of the conditions and results which prevail in the mouth. Professor Miller has given a potent reason in his recent paper on "The Human Mouth as a Focus of Infection," in which he has shown by means of tabulated proofs of undoubted authenticity that no fewer than thirty-eight different infections may be traced with more or less directness to the human mouth as the focal or initial point.

Secondly. By causing to be inserted in the current text-books on physiology well written chapters on the teeth and their conditions, and the methods for their protection.

Thirdly. By arranging at our annual meetings under the auspices of the State dental society, before the close of the session, a public lecture or lectures, to which a general invitation be extended to the public at large and teachers in particular. The efforts in this direction shall be in the nature of popular and well written treatises on the teeth and their allied parts, their function in mastication and importance in the proper digestion of food, etc., which cannot but result in the enlightenment of the people as to the importance of our calling, and also demonstrate to them the following facts, viz.: that a clean mouth is as essential to health as a clean skin, that preventive and protective measures there are as important as the protection of any other part of the body, and that the care of the mouth is as much a duty as the purchase of food with which to fill it.

Fourthly. By appointing an educational committee, which shall, if necessary, appoint its subcommittees, consisting of members of the State society residing in different cities and towns of the State, whose duty it shall be to confer with the respective school boards, and if possible, by such concerted efforts succeed in devising and planning the proper course to pursue in accomplishing our aim.

Having myself conferred with several members of the school board of the city of Milwaukee on this subject, I have fully satisfied myself that by united efforts a great deal can be accomplished in this direction ; as I am informed that other corporate bodies, such as humane societies, temperance unions, etc., have succeeded in pursuing this very course. A plan which has suggested itself to me is as follows : As the text-books on physiology in the public schools undergo a change but once in every three to five years, it may not be well to confine our efforts toward accomplishing our aims in this direction only. It would seem wise to me, if the State society, as a body, would take the initiatory steps and consider the advisability of publishing in book or pamphlet form, well written treatises on the oral cavity, the teeth and their associate parts, the relation to, and importance of, the same to other parts of the body, etc., avoiding of course, all selfish or mercenary tactics, and obtaining by proper consent of the school boards the introduction of the same in the respective classes of the public schools, where this branch may be taught, including it as a part of the study of physiology. After this has been accomplished and the study introduced, it would seem to me a comparatively easy task to finally succeed in having it embodied in the regular text-books on physiology, as the school board is vested with the power to make such alterations or additions as it may deem fit, and recommend the same to the publishers whenever new text-books are to be ordered.

Fifthly. In view of the expense of such an undertaking I would further suggest that it may be possible to reduce such expense materially by appealing to the support of the profession at large throughout the State, by voluntary contributions, offering in return for such contributions a certain number of copies of this book or pamphlet for distribution to their patients, which would certainly result in supplying knowledge of lasting benefit and eventually compensate each contributor a hundred fold for his financial support in a matter of such magnitude and importance to the entire dental profession. The desirability of general instruction in dental subjects, both for the good of the people and the benefit of the dental profession, the necessity for concerted action to secure recognition of the importance of the subject by the authorities who have charge of the educational interests of the State, and the necessity of thought and effort to stimulate a desire for this knowledge are all apparent to those who consider the matter. I can only trust that my paper and the discussion to follow will result in the appointment of an educational committee.

A Word About the Treatment and Filling of Pulpless Teeth.*

By C. R. Taylor, D. D. S., Streator, Ill.

There has been so much written and said about the treatment and filling of the root canals of teeth having dead pulps that I can hardly expect to write anything on the subject that is new or original. It is taken for granted that all understand the great necessity for a free and sightly opening into the pulp chamber and canals as the first step in the successful treatment of such cases.

In cases where the pulp has been destroyed with medicinal agents, the first thing to be done is to thoroughly extirpate all the pulp tissue with proper broaches or pulp canal cleansers. Often when it seems impossible to do this with a barbed broach a fine piano wire smooth broach wound with a few fibers of cotton can be placed in the canal and the broach rotated a few times and the pulp will be withdrawn as a whole with the cotton, the pulp tissue having become entangled in the meshes of the cotton fiber. Frequently in fine canals the pulp tissue is so near the color of the cotton that one's eye is deceived in thinking that the pulp has not been removed with the cotton, but by taking hold of the extremity of the broach the pulp can be unwound from the broach and cotton. It will be found that the cotton dipped in full strength carbolic acid will aid in the withdrawal of the pulp tissue.

In teeth with disorganized and putrescent pulps peroxide of hydrogen or 3 per cent pyrozone are the best agents known to lift out of the canals the particles of disorganized tissue. But when they are not at hand the smooth broach wound with cotton and moistened with full strength carbolic acid will thoroughly remove all broken down tissue, by repeated wiping out of the canals.

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*Read before the First District Dental Society of Illinois, at Peoria, September 11, 1894.

There is no doubt that many practitioners are depending too much on antiseptic medication and too little on instrumentation in the treatment and filling of pulp canals of teeth. Too much condemnation cannot be entered against any method that suggests the leaving of pulp tissue in root canals, when it is in any way possible to remove it. Such a theory is wrong in principle and bad in practice. There is no antiseptic remedy that can be depended upon to do what thorough instrumentation can do. Of course there are cases where it is impossible to remove all the pulp tissue from the minute canals. In those cases we have to do the best that can be done. Such cases need the most thorough chemical treatment, sometimes for months before being finally filled.

Frequently when the first attempt is made to open canals it cannot be accomplished because they seem to be hermetically sealed. But by the thorough removal of the depositions at the floor of the pulp chamber with excavators and burs, and sealing in the chamber a ten per cent solution of sulphuric acid for a day or two the canals can be opened and afterward enlarged by continuing the acid treatment. By this means cases which seemed impossible of successful treatment are readily brought under control. The fact needs emphasis that there should be the utmost thoroughness in all the details pertaining to the treatment and filling of pulpless teeth. There can be no negligence without the danger of future trouble to both patient and operator. Unless the preliminary steps are all carefully taken, the patient comes back in a few days after the filling has been inserted, with some irritation at the roots of the tooth. The next day or two there is inflammation, and by the third visit there is not only irritation and inflammation, but *damnation* to all parties interested.

After the canals are freed from all pulp tissue they should be made dry, so that the antiseptic dressing of the essential oils shall not be interfered with by moisture. Water and oils will not mix and it is a natural law that two bodies cannot occupy the same space at the same time. It is necessary, if it is desired to saturate the dentine of a tooth with any oil, to see that the tooth is made as dry as it can be done without endangering the integrity of the tooth, *before applying the oils.* After there has been thorough instrumentation and medication, dry the canals completely, and then slightly moisten them with the oil of encalyptus. Then place a sufficient quantity of chlora-percha in the canals to soften the gutta-percha points that they are to be filled with. To more solidly and completely fill the canals, place a copper point into each one, being careful not to pass the metallic points through the foramen. Sometimes gutta-percha points cannot be used because of the smallness of the canals. In these cases the canals should be pumped full of chlora-percha and the chloroform allowed to evaporate. A fine copper point can then be inserted in the canal and this will result in as nearly a perfect filling as by any method yet devised. The oil of eucalyptus causes the gutta-percha to adhere to the dry walls of the canals and the metallic point squeezes out the excess of the soft gutta-percha.

Success in our profession and the comfort of our patients command us to be thorough in our operations, and since so many roots are crowned and bridged, nothing in our labors will bring so great a success or comfort to our patients as the *faithful perfect treatment of pulpless teeth.*

NEW MEDICINES, THEIR ACTION AND APPLICATION IN THE MOUTH.*

By F. K. Ream, D. D. S., M, D., Chicago, Ill.

The purpose of this paper will be to present in part, a general résumé of late journal readings, calling attention to recent remedial agents used by the profession.

I believe that we ignore much valuable reading, for it requires frequent recapitulation of even familiar subjects, and great vigilance on our part to keep pace with the rapid strides of our profession. The dentist who quits his practice for a few years or goes to some town content with knowledge gained while at college, is lost when he seeks association with some of his more fortunate colleagues.

In this paper we will present merely a brief review, trusting that the discussion which follows will develop and emphasize the more important "new remedies," and show their successful action in the mouth. After repetition of some well-known remedies such as trichloracetic acid, sodium peroxide, pyrozone, etc., reference will be made to other less important agents. For results of trichloracetic acid Dr. Harlan receives credit as well as Dr. Tuller, the latter giving method in use with sodium peroxide.

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*Read before the Odontographic Society, Chicago, June 11, 1894.

In the treatment of pyorrhœa, deposits should be removed and the edges of necrosed process broken down with instruments. Pockets should then be flooded with pyrozone 3 per cent, washing out debris, and followed by the use of cassia water min. 12 to the ounce, and to each ounce of this mixture add min. 5 of sulphuric acid. If the teeth are sensitive an alkaline wash may be used, such as aq. calcis, or weak ammonia water. The action of this solution is astringent, stimulating, and an accepted bactericide.

The treatment should be used every four or five days from two to five weeks. Judgment of course must be exercised. The teeth should be rendered immobile in their alveolæ, and other details known to us all ; where pain is present an injection of one minim of wine of opium will quickly relieve.

Trichloracetic acid may be used in solution of one-half to 1 per cent, or 6 to 8 per cent in water. Dr. Harlan states that in a period of less than two minutes, where one-half per cent solution is used, all germicidal movements will cease. A favorite solution is 10 per cent in pyrozone, though 50 per cent solutions can be used.

This solution can be introduced into the pockets of teeth by means of the hypodermic needle, or by the use of a wooden toothpick, first absorbing the secretion and isolating the part which is to receive the application, thus preventing the spread of the material over other portions of the mouth. In sluggish cases this acid may be used full strength, but the greatest care must be exercised in the protection of surrounding tissue ; however this must be done in the handling of all caustics. The pleasing results of this excellent remedy are soon apparent if sanguinary deposits have to be removed at each sitting, where the gum heals and recedes, more clearly showing its location. Antiseptic and astringent washes are indispensable, such as Dr. Clifford's "dentilavus," the results of which have been very gratifying.

Though the uses of hydrogen dioxide (pyrozone) have frequently been presented, a brief reference to its merits may bring out something new in the discussion. In the congested condition of the mucous membrane in the mouths of children, due to a strumous diathesis and malnutrition during gestation, pyrozone 3 per cent is of untold value, bleaching the teeth and retarding the ravages of caries. As a mouth wash alone or combined with listerine, carbolic acid, oil of gaultheria, and other essential oils, the most pleasing results can be obtained in the mouths of tobacco users, and those individuals who habitually ignore common hygiene. Its action as a cleanser is so marked that it frequently becomes all sufficient as a means of cure. Ulcerating surfaces, aphthous patches, furred tongue and kindred suppuration quickly yield to this "great seeker of the effete." Pyrozone 5 per cent and 25 per cent can be used in the treatment of pyorrhœa and all abscess pockets. Small pledgets of cotton may be dipped in the solution and introduced in the pus pocket at intervals of from five to ten minutes.

Care should be exercised not to permit an excess of the caustic solution to reach the mucous membrane where not desired. Should an accident of this kind occur however, tannin and glycerine will quickly arrest its action. Eschars produced by pyrozone, unlike those produced by other escharotics, are not followed by exfoliation, but if the cuticle be not broken all traces disappear in a few hours. Pyrozone does not seem to deteriorate with age like $H_2 O_2$, sold for chemically pure. The absence of acidity in pyrozone makes it of untold value for dental purposes alone, for all acidulated drugs affect the enamel to some extent. As a tooth bleacher, pyrozone ranks first. Applied with a platinum director, around which have been wrapped a few fibers of cotton, saturated with the bleacher it is introduced into the cavity and its evaporation accelerated by means of a constant current of air.

Among the numerous papers read at the dental congress, was one by a gentleman from France on boracine or tetraborate of soda, the salient points of which are as follows: A chemically pure salt composed of equal parts of borax and boric acid. It is neither caustic, toxic nor irritating, and is tasteless and odorless —properties that should belong to an antiseptic. It can be combined with water to make a 16 per cent solution. The essayist claimed that the action of the drug was excellent in the treatment of the mucous membrane. A number of clinical cases were given, treated with this combination, among which was an abscess of the maxillary sinus, produced in consequence of the too prolonged retention of a first molar; this and a number of cases showed complete absence of pus after the use of the above solution and tamponing with the powder. The results he gave were sustained by a number of prominent doctors who use boracine in their practice with great satisfaction.

Two articles appeared in the *Cosmos* July, '93, one upon the use of magnesium hydrate in erosion cases, the other on sodium peroxide. Not having used these preparations for any length of time, the notes are given verbatim, expecting the discussion to bring out their redeeming qualities.

Says Dr. Kirk: "A method for locally counteracting the injurious action of acid secretions, especially in erosion cases, and which has given me greater satisfaction than any means which I have hitherto employed, is by the use of a preparation known to the drug trade as Phillip's Milk of Magnesia, which consists of precipitated magnesium hydrate held in suspension in water. It is to be applied in the same way that limewater or precipitated chalk is used for the purpose of bringing about an alkaline condition of the oral fluids, by neutralizing the excess of acid present. A teaspoonful taken into the mouth and allowed to float around over the teeth coats them with a slight film of magnesium hydrate, which is sufficiently adherent to protect the tooth surface from the acid action for a number of hours. I have tested the reaction three hours subsequent to the application, and found it markedly alkaline. It is probably sufficient to prescribe its use three times daily, after meals, though when used night and morning the action is markedly beneficial in retarding erosion. Its advantage over soda bicarbonate, chalk or limewater is because of its continued action over a considerable time and the film-like alkaline coating which it forms upon the surfaces of the teeth. In cases of chemical erosion or decalcification of enamel at the cervical borders of the teeth, it has proved a very effective antidote. It neutralizes the acidulated secretions or extraneous collections which erode the surfaces of the teeth and render them sensitive to the touch, or painful when exposed to sudden thermal changes, and lessens their tendency to undermine and destroy fillings that extend to the gums."

"Sodium peroxide is the chemical analogue of the well-known hydrogen peroxide, with several advantages. It is a white solid, strongly alkaline and caustic. It is easily maintained by keeping it from the air, and the solution can be made at any time. It contains thirteen times as much available oxygen as the hydrogen peroxide of commerce, which also can be prepared from it for immediate use by adding to it any dilute acid in proper proportion. Sodium peroxide as a bleaching agent produces results, so far as it can be observed, of the most satisfactory character. The bleaching of all the carious and discolored dentine, in contact with the solution proceeds rapidly, and is quite visible in its progression during the few minutes employed in its application. A fifty per cent solution in water is recommended as most efficient for general use. Full directions for making solutions of any strength accompany each package."

Before I have done with this subject, I desire to recommend the use of menthol for the relief of pulpitis and those obstinate cases bordering between inflammation and suppuration, subsequent to the opening of pulpless teeth. Also, in all cases where counterirritation is desired, following root fillings, and for facial neuralgia in general, incident to lesions and operations on the teeth. I refer to Wyeth's Menthol Pencil and Inhaler, sold by the drug trade. The pencil consists of menthol crystals in a form convenient for local application. "Upon rubbing the pencil over the affected part a sense of coolness, followed by a slight smarting is experienced ; in a few minutes the sensation is dissipated and usually the pain disappears." The excellent results attained by the inhalation of mentholized air, by the mouth and nose, in conjunction with the local application, bespeak for it a cordial recognition from the dental profession. By means of this method, treatment can be kept up by the patient at home, much to their relief, and greatly to the assistance of the dentist.

Much has been said about the drugs and methods of obtunding sensitive dentine. Almost every dentist has purchased quack nostrums from the venders, hoping ultimately to find something to relieve the excruciating pain of cavity excavation. Efforts have been made to find some drug having effect on the sensory nerve, but without avail. We are aware that nerve fibers do not exist in the dentine, the dentinal tubuli being too small to protect sensory nerve filaments. Protoplasm instead of nerve tissue fills the tubuli and connects with the odontoblasts, and it is through this that irritation is transmitted to the terminal sensory nerve fibers and to the brain. By extracting the moisture in the protoplasm through which irritation or pain is transmitted, we may avoid much pain. Alcohol is delequescent and as the protoplasm contains much water it is at once suggested. When combined with hot air the alcohol is vaporized, and moisture is extracted leaving the dentinal tubuli, once filled with protoplasm, empty, for some non-conducting material, such as an essential oil. This hypothesis was presented at the dental congress, but without any means of carrying it out, therefore, I have since purchased Dr. A. J. Rust's dehydrator, which seems to fulfill the requirements. The results of its use have been briefly as follows: Case 1. Patient, female extremely hyperæsthetic (having babe of three months), and suffering from leaking compound gold fillings, right lower first and second molars. Decay not having advanced sufficiently to devitalize, several efforts to prepare cavities were made in vain. After application of the dam, Dr. Rust's dehydrator was applied for five minutes and with a rose-head bur rapidly revolved in the electric engine, a large portion of the tooth was cut away, the pain produced being so slight as to be easily tolerated by the patient. The instrument was applied for the second and third time and the tooth cut away mesio-distally, and filled with amalgam. As to the application no secret exists, or special dexterity required. In obtunding large surfaces of decay, the portion to be operated upon first should receive the application of the instrument and then be excavated at once, and the process repeated till the entire cavity is prepared. Many of the most sensitive teeth which would otherwise have been devitalized or filled with phosphate of zinc and left till a later day have been operated upon and filled by this method. The writer would not recommend it as producing painless operations in all cases, or indeed producing complete anæsthesia in every acceptation of the term, but nearly all teeth are obtunded sufficiently to be operated upon with perfect comfort to the patient; indeed, I have found only two cases which apparently did not yield to the action of the dehydrator.

PROCEEDINGS OF SOCIETIES.

MINNESOTA STATE DENTAL ASSOCIATION—ELEVENTH ANNUAL SESSION, MINNEAPOLIS, SEPTEMBER, 12, 13 AND 14, 1894.

PRESIDENT'S ADDRESS.

BY DR. C. H. STEARNS, ZUMBROTA, MINN.

Gentlemen: One thing is evident. "There is something rotten in Denmark." There is something wrong in the ranks of the dental profession, or of this society. We have a society in a State numbering four hundred dentists, meeting in a city containing one hundred, and see the representation! I say again, there is something decidedly wrong, either in the society or in the individuals comprising the dental profession of the State of Minnesota. Where is the difficulty and how can it be remedied?

In the past ten years, this society has reason to be proud of its work. We have accomplished many very good things, We have induced legislative action which has had a tendency to raise the standard of the profession in the State by shutting out poor material from our ranks. We should continue the work in the same line.

Another thing we can do is to use every effort to promote the education of the individual. The only way we can raise the standard of the profession is through the individual. We have in this city a dental school which is second to none. I wish to call the attention of the members of the society to the work done in that field. I presume many of you have visited the school while in session. I wish those who have not would make it a point to do so. You will be surprised at the quality of the work. I think the Regents and Faculty are worthy of all praise for the efforts they are making, and this society should sustain them in their work. There is another way by which we may hope to raise the standard of education: that is, by providing some means of help for members throughout the State, who wish special instruction. I find when we get by ourselves, with only opportunity two or three times a year to discuss these matters, we go to sleep and when we wake up, find we are away behind. The race is run, the prizes awarded, and we are not in it. I should like to see some method arranged by which such members can secure help if they wish it. Last year, and at former times, a Chatauqua course has been recommended, but they have not been successful; perhaps the better plan would be to have this society decide upon some special work to which the attention of the entire State shall be devoted the ensuing year. Then let some one arrange a syllabus, setting forth a list of books, points to be looked up, material to be used, giving hints, etc., which would furnish a guide to those wishing to improve themselves in such particular branch. With this help they could so inform themselves as to be ready to take an intelligent part in the discussion at the end of the year. At this time use some of the surplus funds on hand to secure instruction in that particular branch from some capable man. Let each man make it his business either to learn from, or teach some one else on these points. In this way we may help out members who are lame, and make it an object for them to belong to the society.

This will also help our discussions. Many of us hesitate to take part, simply because we do not know the status of the profession on the subject. We do not know whether what we say is back number talk, or up to date. It is too much effort for many of us to go away from home for a regular post-graduate course. If we can get a special line of study marked out, with some few days' instruction on that branch, it will in a great measure take the place of such post-graduate study.

If the members generally will follow such a course the improvement would be manifest in a very short time.

I would like to call attention to the records of the society for the first decade. It would be advisable for the society to place this matter in the hands of a committee, with instructions to prepare and publish a history of the society for the first ten years of its existence. That would bring it up to the present time. Let it be placed on file in the public libraries of the State; one copy placed on file in the archives of the society, and perhaps one with the State librarian—so our records would be preserved, no matter what might happen.

In the Minneapolis Public Library I find a nearly complete file of the periodical literature of dentistry. I understand that the local society is unable to continue them; it seems to me an extremely valuable thing, and I suggest that the State society make an appropriation, if necessary, for a completion of the file, keeping it up to date. I understand there are some funds of the old State society which might become available. There are enough members of the old society belonging to this society to form a quorum, and perhaps that money could be secured and applied to this purpose.

We have had offered us to-day a report of the Minneapolis Dental Society for the past year—a report of the work performed by that society. I am very glad to see that report offered, and would like to have arrangements made by which each year a report from each of the local societies of the State would be presented to the State society—not for discussion, but for publication—thus emphasizing the fact that the local societies are simply parts of the State society. We can thus unite and show a record of the work being done throughout the State, which will be particularly valuable.

DISCUSSION.

Dr. SUDDUTH: There are two or three suggestions which seem to me pertinent, and the points well taken. As to the matter of organizing Chatauqua or reading circles, I would like very much to see such lines of study inaugurated. The effort was made in Chicago. I don't think they have met with any degree of success in reaching country members. They have had meetings in Chicago in connection with the Chicago University, and the courses of lectures have been interesting, but I think they have as yet failed to reach the country members.

I do not remember whether there was a committee appointed a year ago to look into this matter or not. It seems to me we had some talk of such a committee. The suggestion of the President that the faculty of the college be requested to take an interest in this matter brings me to my feet. I want to say that we will do all that lies in our power—furnish a syllabus of study in any particular line recommended by the society, furnish means of instruction, and throw open our clinic and the facilities of the university in any form advisable. I wish to call attention to the fact that the university has established and published a complete post-graduate course to take effect the coming winter, and that the Board of Regents has authorized the issuing of a certificate bearing the seal of the university, to be granted on the completion of a certain prescribed course. This course can be arranged for and completed in six weeks' time so that to a certain extent that post-graduate work will answer; but if it is desired to go still further and allow the work to be done in reading circles by country members of the dental society who cannot afford to avail themselves of the advantages offered here, we shall be glad to do anything we can in that way. I believe if such work were started and carried out for a time it would be a beginning that would lead to grand results. What we need is to get into the way of study. Many of us have been out of school for years and dealing in practical lines so largely that we have become rusty and the daily paper or magazine is about all we have time for or find interesting; but, having once started, our pride will induce us to carry on the work. I think the suggestion is timely, and I trust will bear fruit.

Another point I was interested in was the matter of filling out and keeping up the files in our public library of the journals published in this country. I have not had opportunity to talk with the President, but had made up my mind I would bring the same thing before the society if no one else did. If you want to prepare a paper, and there is something you need to know, there is the library where you can find the complete literature of the profession. I think it would be a most excellent step for the society to complete that file and keep it up for the use of the dental society.

The matter of the reports of the local societies to the State society is something I have had very near to my heart for the last ten or fifteen years. If we can get our local societies to report to the State society and the State society, by delegate, to the National Society, we shall have a continuous chain of interest. I have talked to members of societies in the East, time and time again, and I think there is a feeling through the profession at large that the time has come for reorganization. There is strong probability that they—the American Dental and Southern Dental Associations—will unite and do away with permanent members and make it a delegate body. The delegates will carry with them, in that case, reports of the State societies, and if we can have on file the reports of the local societies in the State society, that will make the National society a depository for the entire literature of the year.

Dr. C. W. NUTTING, Spring Valley: There are two things in particular of the many good points in the President's address, which have struck me very forcibly, *i. e.*, in regard to the Chatauqua work, and the attendance at our dental meetings.

I am a seeker after information, and to me these meetings mean much; therefore I cannot afford to miss them, although I may have to leave necessary work at home, as I did this time. It is often said that by mingling together we get the greatest and most important part of our knowledge. That is why I am here to-day. And it seems to me that members of this society commit a gross injustice by not attending. Virtually, every member pledges himself to attend by placing his name to the constitution, and enrolling upon the Secretary's book.

As to the Chatauqua work, it is a grand idea, and if some plan could be introduced and encouraged by the society, it would have my hearty approval and earnest support. I will be one of the first members to unite in such a work. Living in the country, far from the city, I find it hard to advance in the profession, as I would like. We country dentists cannot get together every month as you city people do; therefore this branch of work means much more to us. Then why should not the State society take hold of this, and promulgate some plan of study, thereby bringing the country fellows more in personal contact with the latest advancements.

Dr. C. M. BAILEY, Minneapolis, Minn.: There was one thing in the address which attracted my attention. The President advised the adoption at this meeting of some subject to which the members shall give special study during the year, and report results at our next annual meeting. This strikes me as a particularly valuable suggestion. It seems when we come together at our annual gathering, that too much time is consumed both in the reading of papers and in discussing them, by those of us who live in the larger cities. This is not because others have not observed as carefully, and read as thoroughly. We always find in private conversation the experiences of our brethren living in the smaller places to be as systematically noted, and their thoughts as clearly defined as were those who have given them public expression in the discussion. There seems to be a disinclination to speak in public amounting almost to a diffidence on the part of many who come here that is not warranted by the facts, and a plan of action which would serve to bring out these silent thinkers would very greatly tend to the interest and profit of our conferences.

The President referred to the dental library which is maintained by this city in its public library building. This library is a part of the medical library, and is housed in the same alcove. It is open and free, and although not yet everything that we could wish, it does contain several works not readily found, at least in all our private libraries. "Farrar's Irregularities of the Teeth" is the best work extant on that subject, although only the first volume is as yet published. "Black's Dental Anatomy" is also the best work on the subject in any language. The complete files of the *Cosmos*, and copies of other magazines, either complete or in part, and many of the more common works, as "Garretson's Oral Surgery," "The American System of Dentistry," etc., etc., make this library a valuable one for reference. The medical works in the same alcove are open to consultation, and add to its value. This library is equally for the use of our visiting brethren as for those who live in the city.

I shall be very glad to further all I can the project to obtain the funds of the old State society for the purpose suggested by the President in his address. I am Secretary, and Dr. Bausman, of this city, is Treasurer. We have often spoken together of the matter, and if the society wishes, I will see if the consent of the several members of the society can be obtained for passing the funds in the hands of the Treasurer over to the city librarian for this purpose.

Now, to return to the subject. I want to heartily second the recommendation of the President, that we choose a subject for special and systematic study during the current year, to be pursued by all the members of this society, and report thereon at our next annual meeting.

Dr. M. B. Wood, Mankato, (on behalf of country members): I do not know as I can add anything to what has been said, except to express my sympathy with the suggestion made. The suggestion is one that cannot be taken up too soon. I do not think the President was amiss at all in saying that members who live by themselves get rusty on certain points. They do not get together as often as men in the cities who have the benefits of local societies. I do not know why it is but it is a fact, there does not exist the fraternal and kindly feeling in the small towns where there are two or three practitioners, as is found in cities where a larger number of men are engaged in practice and where everybody does not know his neighbors' affairs.

Dr. Steele, Forest City, Mo.: I have a suggestion and also an offer to make. In my literary work I take complete files of all the dental journals—have to, in compiling my work. I have a good many that I do not attempt to keep for binding or anything of that kind. If there are any that you think will be of value to you, you are welcome to them. (Applause.)

Dr. C. H. Goodrich, St. Paul: I am very much pleased that the President has introduced this discussion of the Chatauqua idea. In my address last year, as President, that was my theme and it was my hope at that time that the subject would be taken under discussion and a committee be appointed to see what could be done, but the thing fell flat and was not discussed at all; so I am pleased to find the seed has not been sown in poor ground but is found growing and bearing fruit. I personally feel the want of something in this line to induce me to study. In a busy life, a person goes home tired, and if there are a few odd minutes at the office, *this* will be an incentive to better use of the time that one is liable to give to less profitable reading. I wish to thank the President for bringing up this idea again.

Dr. T. E. Weeks, Minneapolis: I am very glad the President made the recommendation he has in regard to the records. Being on the committee that originally secured a home in the public library for the little nucleus of a library that the Minneapolis Dental Society started, it has been a matter of grief to me that within the past year or two the files of periodical literature which were quite complete, have been allowed to lapse. I have a list of what they have, and what is now lacking to complete the files. I had intended to request assistance of the State society, believing there are funds that it will be glad to appropriate for this purpose.

In regard to preparing something in the way of instruction about the time of our State meeting, it seems to me a remarkably good idea. Last week we had with us Dr. Bonwill, of Philadelphia, who gave a clinical lecture on the manner of articulating teeth by the Bonwill law of occlusion. It occupied less than two hours, but we were much benefited. How much better if we could have some one competent to give such instruction, spend sufficient time to instruct every member in the principles established by Dr. Bonwill. We have a man in our city who is thoroughly competent to give such instruction and I think he would be very glad to do it. I hope this matter will receive attention at the hands of this society.

Drs. W. X. Sudduth, C. H. Robinson and C. H. Goodrich were appointed a committee to consider the recommendations offered by the President. After taking a concensus of opinion as to the subject most desired for study, they rendered the following report:

The committee desires to suggest that a committee consisting of three members of the State society who are also members of the original State society be appointed, with power to act, to secure the funds of the old State society and invest them in reference books and magazines, (completing the files of the present list of periodicals) that shall be placed in the Minneapolis Public Library, and that this committee shall work in conjunction with another committee to be appointed on the matter of study.

2d. The report of the committee on the cards that were sent around in reference to what the dentists are interested in and desire particularly to study this next year is that pyorrhœa alveolaris seems to be the most popular subject, and the committee suggests that it be made the subject of study for the entire State, the coming year, and that the syllabus be gotten out indicating the lines of study to be taken up and what remedies shall be tried and naming reference material, both books and magazines that may be looked up in connection with the year's study. Furthermore, that a committee of five be appointed and that this committee be given an order on the Treasurer for not to exceed twenty-five dollars, to cover expense of printing and postage in preparing the syllabus of study and sending it to each member of the State society.

3d. That a committee be appointed on the history of the society, and instructed to obtain as much of the back history as possible, down to the present records, and report to the next meeting of the society.

4th. That the attention of the society be again called to the lectures of the University Extension course of the State University; that the course includes subjects relating to physics, chemistry, materia medica, therapeutics, pathology and embryology, in fact nearly all phases of scientific study in connection with pyorrhœa alveolaris that you will need can be brought right to the door of each and every dentist in the State, if they will simply coöperate with the principal of the High School. These lectures might be used in connection with the approved topic of study to the advantage of each dentist. The cost is but $25 for each individual lecture, $60 for the course.

The President appointed, as the committee to secure funds of the old State society, Drs. C. M. Bailey, D. J. Whiting, and A. T. Smith.

On course of study for next year, Drs. W. P. Dickinson, C. A. VanDuzee, C. W. Nutting, Geo. V. I. Brown and L. C. Davenport.

On publication of history of society, Drs. T. E. Weeks, H. L. Cruttenden and C. M. Bailey.

On the recommendation of the executive committee the DENTAL REVIEW was made the official organ of the society.

THE ARTICULATION OF GOLD CROWNS.

BY DR. W. P. DICKINSON, MINNEAPOLIS.

In the assignment of subjects for discussion at this meeting, by the executive committee, special topics have been placed in the hands of subcommittees to report upon, or to open the discussion of them. The general field of crown and bridge work has been again divided, and I am asked to give a demonstration upon the formation of the cap or occluding surface of bicuspid and molars, when made of gold. From the fact that in most of the contributions to the literature of the subject, the details or technics are supposed to be familiar to the reader, when they may not be, I presume is the reason why I am asked to demonstrate before the society as a whole, rather than in the clinic, so-called.

There is probably no single topic in the entire range of dental science, on the mechanical side, that is so little studied and consequently so little understood, as that which we speak of as the articulation of the teeth. I need only call to mind in support of this statement, the form of articulators in most general use to-day, which admit of but one movement, *i. e.*, in the manner of a hinge ; and it speaks little for the progressiveness of the vast majority of the profession, that they remain satisfied with an instrument but one remove from the primitive plaster articulator of our predecessors, when there is within reach, means of increasing the efficiency of their services, giving additional satisfaction to both themselves and their patients. The laws that govern the movements of the jaws and the occlusion of the teeth in all positions must be mastered to be appreciated. This requires some study and experimentation, and so many go on from day to day, wondering at only partial success, when a fuller measure, if not a perfect success is within reach. But I forget that I am not to speak of the articulation of artificial teeth when mounted upon plates. The same laws, however, hold good in the articulation of crowns, as I will endeavor to show.

Dental mechanics many, make gold crowns many, but artists who construct crowns that bear the artist's stamp are not so many by far. The purely mechanical construction of a gold or other crown, may appear faultless, out of the mouth, judging the work from the standpoint of the manufacturing jeweler, but unless it fulfills the purpose of its construction it is a failure complete in spite of its mechanical excellencies. The primary object of gold crowns is to restore broken down teeth to a condition of service, and should seldom be placed in conspicuously exposed situations; whenever the latter is necessary, they must be constructed after artistic models and artistic principles, to be tolerated by any one possessing artistic taste or instincts. To meet these requirements they must possess certain definite qualifications, among which they must be strong, for durability; they must be perfectly finished, having no irritating edges when in place. They should be constructed on the occlusal surface so as to fully replace the lost organ, that is, have a surface over its entire area that may be utilized in mastication, just as if the tooth were a natural one instead of artificial. And again, mechanical laws and principles must always be observed, both in the construction and placing in position. I am not expected to give the technics of preparing the root and making the band, but will say that any one can easily convince himself what the ideal preparation should be by taking an extracted molar, for instance, and cleave off the enamel; this can easily be done on a tooth that has been out of the mouth for some time and has become thoroughly dried out.

A measurement just below the line of the gum, taken by twisting a fine wire about it will give length of strip of gold to form the band. This band should in ordinary cases be of No. 29 American gauge in thickness, and wide enough so that when driven on the root it will allow the teeth of both jaws to close without striking. The gold should be perferably of 21 carat fine, and soldered with 20 carat solder. A band placed on a root in this manner allows the operator an opportunity to see whether its adaptation is perfect, which cannot be certain in any of the ready-made crowns. The next step is obtaining the bite, which is easily done by the use of modeling compound of sufficient size to include a tooth or two on both sides of where the artificial substitute is to be inserted—

with the band on the root and the compound not too soft the patient will bite into it. It must remain until cold and then be removed carefully from the mouth. The band is now taken from the root and placed in the depression made by it in the compound, dropping a very little melted hard wax inside the band, if necessary, to keep it in position.

If for a single tooth or a small bridge, the articulator shown in Fig. 1 answers a good purpose. This instrument is formed complete,

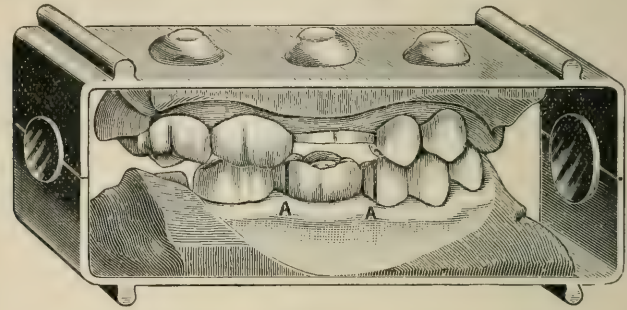

FIG. 1.

by using two of the halves, as shown in Fig. 2, and reversing one upon the other. After separating the articulator and removing the compound, the side opposite the band is marked to show the outside limits of the space to be occupied by the occlusal surface of the new tooth, A, A, Fig. 1. This enables us to select a metal form, as shown in Fig. 3, A, B, which makes a perfect occlusion between these lines.

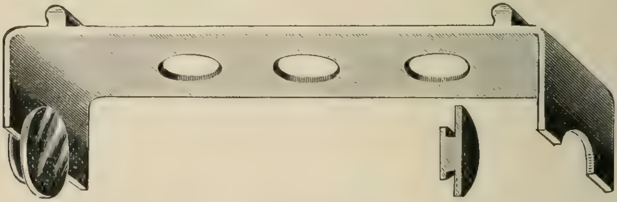

FIG. 2.

The stem of this form is now passed through the metal disk, Fig. 4, A, and imbedded in moldine placed in a case-ring, Fig. 4, B, of the same diameter of the disk. The casing and disk are kept in proper position by inclosing them in a shell, or split ring, Fig. 5, which is of a width just equal to the width of the casing and the thickness of the disk. With the stem between the first and second fingers, using both hands if necessary, the moldine is forced upon the tooth form and a perfect matrix is made in which to cast the die, Fig. 6. The moldine should not be very soft, and a dusting of powdered soapstone will facilitate removal of the form without drawing the edges of the matrix out of shape.

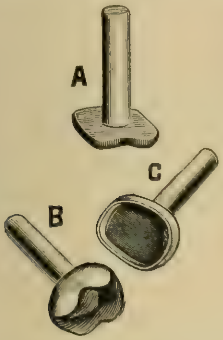

FIG. 3.

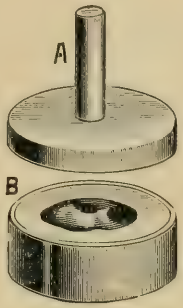

FIG. 4.

The disk and form being removed from the moldine, a case-ring is placed over the matrix which is still in the shell, Fig. 5, and fusible metal is poured in until more than level full. When fully set, the die should be removed, chilled in cold water and perfectly dried; it is now incased again in the shell, and the counterdie made by pouring the metal in when just in a state of fluidity. The surface on this counterdie should be made level with the case-ring by scraping off the surplus with a hot knife or spatula, when we have the die with its counter, as in Fig. 7.

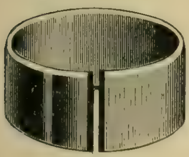

FIG. 5.

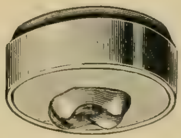

FIG. 6.

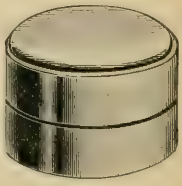

FIG. 7.

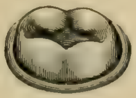

FIG. 8.

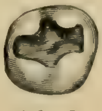

FIG. 9.

The object of chilling the die before pouring the counter is to prevent them fusing together. The advantages gained by casing the dies are, that we have less metal and consequently less shrinkage, and the metal being brittle is protected from breakage in the process of swaging the caps.

To form the cap, a blank of gold, preferably round in form, and of 30 gauge, is gently coaxed down into the counterdie with soft wood chasers (about four and one-half inches in length, round, and with rounded face), until the shape is well defined; it is then to be placed over the die, faced up, and brought down into the sulci and over the cusps with a light hammer and strips of lead three-eighths inch by one-quarter inch. It is then finished by a few smart blows with the hammer between the dies. Fig. 8 shows the cap as it comes from the dies, and Fig. 9 the cap trimmed ready for soldering on the band. Another method of forming the cap, is by placing a metal tooth-form in a cup of melted fusible metal, Fig. 10, on the point of cooling, and so forming a matrix into which the gold blank is driven by the use of a lead bullet of the proper size. This may be a trifle more speedy manner, but I think does not give the finish to the cap as by using both dies. The credit of the latter method is due to Dr. C. H. Robinson. The cap, Fig. 9, is now adjusted to the band in the articulator, as the shape of the band will not be exactly the same as the periphery of the cap; a drop of melted hard wax will keep them together so as to be removed from the articulator and placed in the soldering clamp; with 20 carat solder the points that do come into apposition may be lightly soldered together, then with the contouring and adapting pliers, as shown in Fig. 11, the adaptation may be completed and the soldering finished. With these pliers the crown band may be contoured from the cap to open end, and the latter may be drawn in at any point where necessary. In addition to the foregoing I will now add, in reply to individual queries,

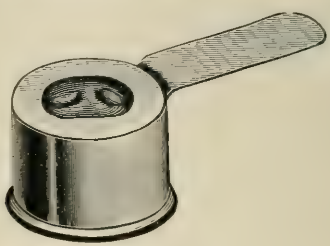
FIG. 10.

some means of meeting apparent difficulties in using the method demonstrated. Should a tooth-form need slight modification to adapt it to a given case it can be easily effected. A form, for instance, may need only the flattening of a cusp, to make a perfect occlusion. In this case, proceed to make the die, then remove from it the required amount before pouring the counter.

A cusp can be raised by adding to the metal form a drop of melted hard wax before forming the matrix in the moldine.

The entire cap may be made higher by inserting a disk of sheet wax between the metal disk and tooth form, trimming the surplus from around the latter before forming the matrix. In those cases which sometimes present, where it is necessary to carve a model, by reason of abnormal occlusion, we use the blank form, Fig. 3, C. This is filled with softened hard wax or modeling compound, and pressed upon the plaster cast, in the articulator, between the indicated lines; then with a small, warm spatula the wax is carved in proper form, and we proceed as before. The same method is just as valuable in forming the occlusal surfaces for dummies for bridge work, whether they are of gold or porcelain faced. The Bonwill articulator should be used for the articulation of all bridge work, unless the case may be a small one.

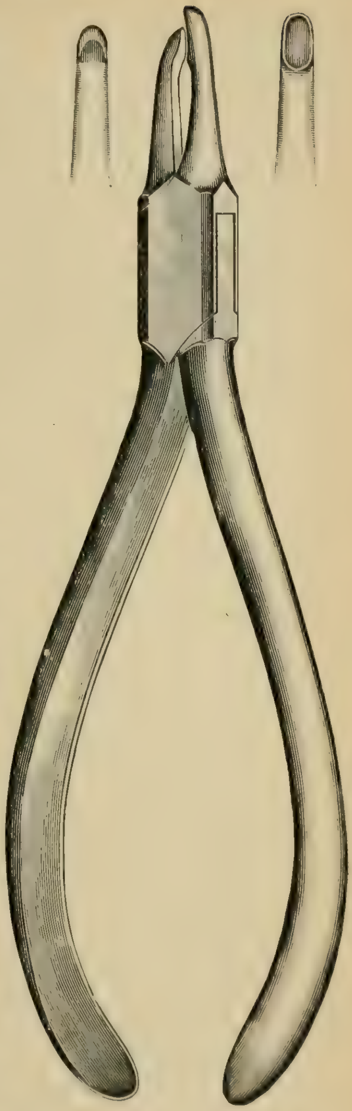

FIG. 11.

The time consumed in making a set of dies need be only a few minutes if the fusible metal is right. I have made them from the beginning in from seven to ten minutes. In conclusion, these methods are the result of experience, and my effort has been to simplify them so they may be helpful to others as they have been to me. While I, myself, have a large number of forms, I presume a selection of perhaps twenty-four might be made which would meet all ordinary cases, subject to the modifications I have suggested.

DISCUSSION OPENED BY DR. C. H. ROBINSON, WABASHA, MINN.

I think the doctor has quite thoroughly covered the points in his paper by his demonstration. He has shown great ingenuity in his system, or, as he calls it, method, in having it comparatively simple, yet quite comprehensive.

I agree with him that in most cases there is nothing better than the natural teeth for models for this purpose, but in some mouths the teeth have become worn and have almost lost their resemblance to their original form. In such cases I prefer to mold or carve a model.

After fitting the band I take a bite and make my articulating models with the band in place on model. Then fill in top of band with plaster of Paris, or moldine and carve or mold to occlude properly. Cut away neighboring teeth on model so as to have a half inch clear space on all sides of the band, and build up with moldine to level on top of band. Place Melotte's rubber ring or one of Dr. Dickinson's metal rings around band and pour in fusible metal. This gives a counterdie of exact shape and depth of cusp. Make gold cap by swaging into counterdie with lead. Cut the plaster of Paris or moldine cusps off from the band and place gold cap in position, mark relation of band and cap, break band from plaster model, and solder and finish in usual manner. But as Dr. Dickinson says no one method is best suited to all cases. Instead of having both die and counterdie of the same metal, I prefer to have the die soft and the counterdie hard.

The Doctor's method and appliances ought certainly to be in the hands of every progressive dentist, and I trust that he will soon place them upon the market.

In reply to question by Dr. Orton as to contouring, Dr. Robinson said, "I leave the surrounding teeth until I have built up my cusps, contouring them properly, then cut the plaster of Paris away."

Dr. T. E. Weeks, Minneapolis: In the articulation of gold crowns, Dr. Dickinson has ably presented the necessity for sharp criticisms on methods of using fixed articulators to be the guide for articulation or occlusion which is not fixed.

I will suggest a method for securing perfect contour and occlusion with few appliances. After the root is prepared, fit a band and shape it to secure perfect contact with the adjoining teeth, preserving the interdental spaces. While this band is in position, fill it and build upon it sufficient quick setting plaster to secure an impression of the occlusal surfaces of the opposing teeth, when the mouth is closed naturally. Before removing from the mouth, the plaster should be carved to insure a perfect occlusion in any position taken during mastication.

Remove band and plaster; shape and finish as you wish the completed crown to appear. Fill a brass ring like B, Fig. 4, with moldine and imbed the band in it; pass a brass disk having an opening sufficiently large to admit the band down upon the top of the ring. Adjust the band and cusps so that the band is just flush with the top of brass disk. Melt some fusible metal in one of Dr. Robinson's little cups, Fig. 10, and with the ring carrying the band and cusps, make the counter or female die. An occlusal surface formed in this die will be an exact reproduction of the plaster carving and will go into position upon the band so accurately that it may be soldered and finished.

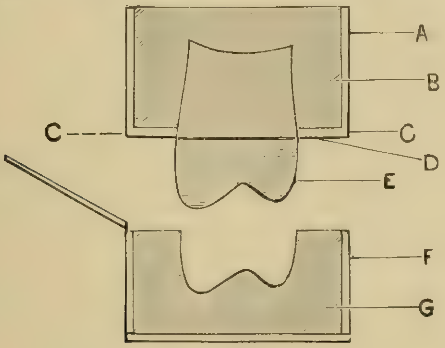

FIG. 12.

When the completed crown is placed in position upon the root, it will show perfect contour and occlusion. The appliances are few and may be homemade, and no articulator is necessary save the one nature provided.

Fig. 12 shows the different parts in section. A, brass ring;

B, moldine ; C, brass disk ; D, line of demarcation between gold band and plaster model of cusps; E, plaster model ; F, brass cup ; G, fusible metal counterdie.

Dr. DICKINSON : I am glad to hear Dr. Weeks make that point. In carving the cusps from one point at rest, with the jaws closed, an artist (as Dr. Robinson is), would know how to shape it so that with the teeth in other positions, the jaws in motion would not loosen the crown. Many crowns otherwise firm and fast would remain so if proper attention were paid to articulation.

THE KNIGHT COMBINATION CROWN.

BY DR. HENRY A. KNIGHT, MINNEAPOLIS.

In preparing a paper upon this subject, it has not seemed necessary to enter extensively into the history of crown work, or consider the details of various crowns now made. My object is to concisely describe the preparation of the root and the making of a crown, which I think in some respects superior to many older methods. The most desirable feature of porcelain crowns in general, is their resemblance to natural organs, hence porcelain becomes a necessity for artistic work. For a number of years the prevailing substitutes for the ten anterior teeth have been the Richmond or the Logan. Both of these forms, however, have their advantages and disadvantages. The desirable points of the Richmond are the security of attachment to the root, conservation of the root, and the adjustment as to contour and articulation. Two constant factors, however, which contraindicate its use are, fracture either in the making or through service, and the change in color caused by the various backings or heating, or both.

The good qualities of the Logan are the shape of the pin, comparative translucency of the crown, its permanent color and general contour of the tooth, while as an offset may be mentioned its various modes of attachment and the somewhat imperfect articulation usually obtained. A study of failures with both crowns led me to consider the possibility of combining the good qualities of the two. The result obtained was presented to the profession at the February meeting of the Minneapolis Dental Society, and with your kind forbearance I will endeavor to describe its minutiæ.

Fig. 1 represents a broken down central incisor. Conservation of tooth structure, being an essential point, should be observed as much as articulation and strength of crown will permit. The greatest pressure brought to bear upon any of the six anterior teeth being from within out it becomes necessary to save the lingual portion.

Let Fig. 2 represent the amputated root, the work having been done with suitable corundum stones and root facing instruments, care being taken to cut the labio-cervical border just beneath the gum line, and the face of the root presenting, as nearly as possible, a flat surface, cut at an angle represented by line A-B, Fig. 1. Burs and reamers may now be employed for the enlargement of the canal sufficiently to easily admit of the introduction of a Logan pin, bearing in mind all the while that the strength of operation depends largely upon the proportion of the root left. With suitable scalers the removal of all the enamel is quickly accomplished and the sides of the root paralleled, ready for the fitting of band or collar, and adjustment of pin. I wish to mention a set of scalers devised by Dr. Calvin S. Case, of Chicago, as being everything desired for the work.

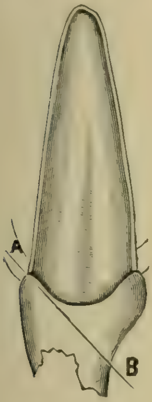

FIG. 1.

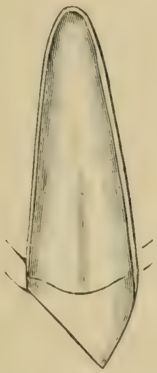
FIG. 2.

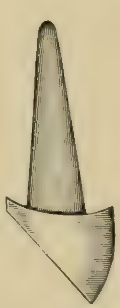
FIG. 3.

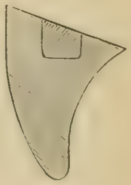
FIG. 4.

A correct measurement of the root is now obtained by means of a piece of fine binding wire made into a loop and pressed up just beneath the free margin of the gum, then twisted by means of flat nose pliers, or other device, until it closely encircles the root. Remove the wire, cut the loop open and straighten, using this as a measurement for the gold band. To make a band, a piece of gold the length of the wire should be cut sufficiently wide when adjusted to cover the lingual portion of the root. Solder and swage over the root, the fitting to the lingual portion being accomplished by means of burnishers, assisted by numerous slits in the band and resoldering. Trim the cervical edge of the band sufficiently to admit of its passing beneath the free margin of the gum about one line, replace upon the root, and with a fine instrument trace upon its inner side a line representing the face of the root. After cutting away the excess of the band, complete the box-like fitting by soldering on a piece of gold for a root facing. A Logan pin is then driven through the facing, and the completed fitting removed and soldered, as shown in Fig. 3.

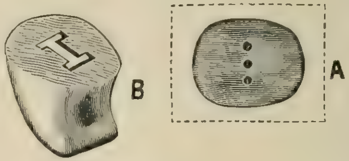

FIG. 5.

Fig. 4 and Fig. 5, B, represent the selected Logan crown with the pin cut away, and as much of the linguo-cervical portion as adjustment and occlusion require. Upon examining a Logan crown it will be seen that a large portion of the same may be removed without materially impairing the strength. The ground surface is now backed with very thin platinum, as shown in Fig. 5, A. It should be large enough to more than cover the same, and three pin holes punched directly over the intact Logan pin.

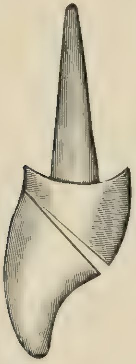

FIG. 6.

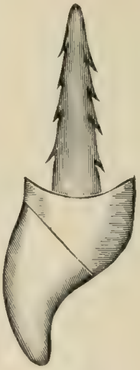

FIG. 7.

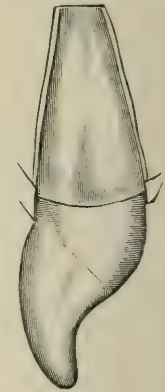

FIG. 8.

Attach at this point with hard wax, and invest for soldering, using equal parts plaster and pumice. This completed we have a porcelain face, as shown in Fig. 5, B. Articulation may now be completed in the mouth by the intervention of sticky wax, and as shown in Fig. 6, a wide range of adjustment is possible.

After perfectly articulating the face the entire crown is removed and invested as before, and the intervening space filled with solder. Fig. 7 represents the various parts united, and Fig. 8 the operation completed. Figs. 9, 10 and 11 illustrate the operation upon a bicuspid.

DISCUSSION OF ESSAY AND DEMONSTRATION OF THE KNIGHT COMBINATION CROWN. DISCUSSION OPENED BY DR. F. B. KREMER, MINNEAPOLIS.

I cannot say anything except in commendation of the crown. I have had abundant opportunity to test its utility in actual practice and the more I have used it the better I am pleased.

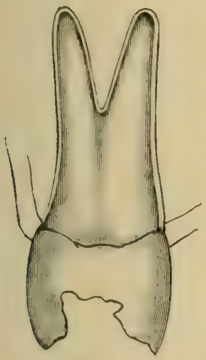

FIG. 9.

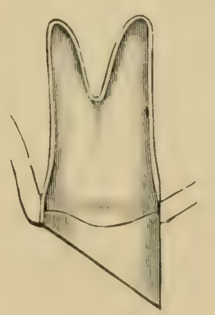

FIG. 10.

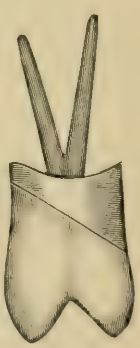

FIG. 11.

It is no small matter to successfully construct one of those crowns. It requires considerable accuracy and skill. I spoiled a good many of them before I succeeded in getting one to suit me. The one Dr. Knight has to pass around is, I think, a better crown than I have been able to make. The doctor omitted to say that this crown is applicable even where the root is badly broken down. He has shown in his illustrations only very favorable cases. The principle can be used even if the crown is entirely gone and I think you can get better results, especially in bicuspids, than by any other method.

In soldering, he advises boring two or three holes in the backing. I have not been able to do that. I have not been able to get the solder to run through the holes. I take a piece of platinum, cutting it somewhat larger than the tooth, then lay a small piece of solder on the end of the pin between it and the backing and as the solder melts the platinum drops down, and I think it solders with less trouble—certainly for me—than in the method he uses. Another point I think very material. In using platinum for this purpose it should be rolled as thin as it is possible to roll it, to avoid, in finishing off, the showing of the platinum edge along the labial surface. If you do not take care you will have a very unsightly rim of platinum exposed to view.

By articulating in the mouth instead of the articulator, you will find you can make a closer joint, instead of having so large a V shape between crown and cap, avoiding the use of so much solder. It requires care, and it is one of the things that I have learned by practice, although Dr. Knight called my attention to it early.

An objection has been raised that this crown lacks strength. Experience in my hands shows it to have all the strength necessary. I have been using them ever since February, wherever I have had suitable cases for them. I have had no trouble from that cause. In cases of very deep underbite it is comparatively easy if the tooth is not destroyed to a greater extent than those shown in the drawings, to save enough of the lingual portion of the crown so that the lower teeth, instead of coming in contact with the porcelain, may occlude with the edge of the gold. In that case there can be no possibility of breakage from that cause. One of the principal advantages, and one which I do not think the doctor laid enough stress upon, is, it makes one of the most natural appearing crowns possible to get with the combination of gold and porcelain.

Dr. C. M. Bailey, Minneapolis: There is one point connected with this crown of Dr. Knight's which he has left out. In backing the crown, if pure gold is used, the backing may be swetted to the pin, making in my opinion a stronger joint than can be obtained by soldering. This is done, as perhaps is known by all here, by bringing the piece of gold and crown just to the melting point of the backing and withdrawing the flame before the metal curls. Of course this cannot be done where platinum is used for the backing as it is impossible to bring platinum to the melting point. In regard to the crown itself, I will say that it is the only all porcelain crown that I can use with any satisfaction to myself on bicuspid roots. The Logan crowns do not have the pin in the proper place for bicuspid roots that come into my office and I have used almost exclusively the Richmond crown, so-called, until I saw this one of Dr. Knight's.

Dr. T. E. WEEKS, Minneapolis: I have for many years used the Logan crown with a band, without any attachment of the crown to the band. The purpose of the band is twofold; it prevents a splitting of the root and protects the root from decay. The root must be properly shaped, *i. e.*, *all* the enamel must be removed; if this is done what remains of the tooth above the gingival line (crownward) will have a slight taper; its greatest diameter will be at the gingival line. If the band fits this taper perfectly it will not slip up and it protects the root from splitting. By this method entire dependence is placed upon the dowel pin. The Logan pin will not betray this trust. I do not hesitate to say that attachment between the band and crown does not add sufficiently to the strength of the operation to offset the trouble and risk of soldering. The large percentage of successful operations which have come under my observation have compelled my conclusions.

Where for any reason the allignment of the root and the crown is not perfect, where the crown must be set out or in or to one side, and the Logan is used, some method of attachment of the crown to the cap is necessary. The one devised by Dr. Knight is the best and simplest that I have seen. It may be used in all cases, and should be by those who believe an attachment between crown and band necessary.

Dr. F. B. KREMER: There is a reasonable degree of translucence commonly lacking in any crown with metal backing.

Another thing, the Logan crown as originally made and adapted with the band is very good, but has a weakness. Dr. Weeks says that the band will not get loose and work up, but I do not believe it. I have seen that it does. Here there is thorough protection from contact with the fluids of the mouth, and I see no reason why an operation of this kind should not be permanent in every sense of the word.

I have heard somebody, in fact several somebodies, say they made this kind of crown long ago. If they have, so far as my knowledge goes, they have not presented it to the profession. Personally, I have very little sympathy with the man who evolves an idea and lays it in a drawer and only brings it out when somebody else has called attention to the same thing.

Dr. REID: Dr. Knight and Dr. Kremer speak of the particular point being soldering the backing. I think it is true. We must be exceedingly careful that the Logan crown is perfectly clean. In soldering, I incorporate the filings in my grindings of borax and cover the backing and crown with this mixture. When the heat is applied there will not be any difficulty in making the solder flow perfectly. In fact, I believe that in this way you can pretty nearly unite the backing to the crown itself.

Dr. C. W. NUTTING, Spring Valley: I am glad Dr. Knight has brought this crown before the society. I have been experimenting in this line of work the last two months. I have constructed a crown similar to this with a piece of bridge work, but it is not exactly as Dr. Knight has described. I am sure his plan is the best. I think his is one of the most artistic crowns made. It is a step in advance in artistic work.

Dr. KNIGHT, closing: I believe Dr. Nutting mentioned that he did not cut the pin out of his crown. There are a good many teeth it would be quite complex to grind the Logan crown to fit such a crown as this, and not cut the pin away. It simplifies the matter by cutting the pin out; it can then be adjusted in any position. If you grind off the palatine portion before you cut the pin off you can use the same pin in the cap.

Dr. SUDDUTH: Is it not better to saw it off?

Dr. KNIGHT: Yes. I used the word cut in that sense. In the Richmond crown the difficulty is experienced in making nice joints, but by backing the end of the Logan crown, no matter how much space between the face and cap it can be filled with solder and a perfect joint obtained. If you have a root standing out of position, you can correct the irregularity in the adjustment of crown.

In regard to saving the tooth, we all know that the lingual portion of the root is the strong portion; the pressure is from within, out, and if the bite is long the opposing teeth may strike on the gold. You do not necessarily have to take pains in grinding the tooth. Of course the closer the tooth is ground to the root, the better operation, but even if the grinding is carelessly done the defect can be remedied in soldering.

Provided the porcelain is not ground away too much, I do not see why this crown is not just as strong as the Logan crown can be, for the simple reason that this pin passing through the face of it, is solidly united. The pin is virtually one after the soldering is completed. If it will hold before, why not afterward ?

TO BE CONTINUED.

REPORT OF THE SUPERVISOR OF CLINICS OF THE SOUTHERN ILLINOIS DENTAL SOCIETY, HELD AT NASHVILLE, OCTOBER, 17, 1894.

C. C. Corbett, Edwardsville: Jackson crib with piano wire attachment for regulating.

L. B. Torrence, Chester: Gold filling on the mesial surface of the superior left lateral, using Palmer's pneumatic mallet.

G. W. Entsminger, Carbondale: Root filling in upper left central, using chloro-percha and gutta-percha points.

T. W. Pritchett, Whitehall: Amalgam filling on the mesio-occlusal surface of the first upper right bicuspid, using a matrix and securing separation for contour by the use of the Perry separator—amalgam condensed with burnisher, mallet and bibulous paper.

G. A. McMillen, Alton: Gold crown left lower first molar.

O. C. Tibbetts, Ashley: Amalgam filling on the disto-occlusal surface of the right upper second bicuspid.

J. E. Entsminger, Murphysboro, demonstrated the use of the elevator in extracting.

G. A. McMillen, Alton, illustrated the use of cocaine in extracting.

G. W. Entsminger, Carbondale: Two amalgam fillings, one on the buccal, the other on the occlusal surface of the right upper second molar.

Clinics are very often just as valuable in teaching one how not to do certain things as they are in showing one how things should be done.

Their object, furthermore, is not only to instruct, but also to provoke exchange of ideas. Hence, gentle criticism is perfectly legitimate and will not here at all events be intended to be personal in its application. It will not be my purpose therefore to note each individual operation, but to report for your consideration in a general way some points I observed.

The operators, with a few exceptions, were handicapped by a lack of preparation in the way of instruments, appliances and materials. In this instance I am free to say the blame which otherwise would lie against these gentlemen would seem rightfully to belong elsewhere, since the names of most of these it appears were used on the program without their consent, or even knowledge. It may be fairly assumed then, that when some of the operations failed to come up to par, they could not in justice always be considered fairly representative of the operator's skill or intelligence. Therefore, you will please understand that I am simply passing judgment on the operation and not on the operator.

It is always interesting to observe how different operators prepare their cavities for filling—and in no part of the operation can the probable success of the filling be so fairly gauged as in this. The firm smooth margins, the square floor, the parallel walls, the scientific shape of the cavity with respect to anchorage, prevention of caries, and the preservation of the strength of the tooth at the same time, in one case observed were in marked contrast to the weak, ragged margins of another case, where the overhanging cusp margins and frail enamel edges were depended on to retain the filling. In the latter case it was very evident to the thoughtful observer that no matter how skillfully the material might be put into the cavity, the filling as a tooth saver would prove a delusion and a snare.

One operator prepared his cavity entirely with burs; with the ordinary cavity bur. Although handled with great deftness, in my judgment it is impossible to secure a perfect, smooth margin in this way, and an examination, under the magnifier, of the enamel margins so prepared, would, I am sure, prove this very conclusively. The engine and chisel for opening and shaping, sharp chisels, excavators and trimmers for the final finish are demanded to even approximate perfection. In the preparation and manipulation of the filling materials, the difference was, if possible, still more marked. In one case, an amalgam filling, by the use of a matrix, the adaptation of which was as ingenious as it was effective (and which I trust you all observed) a simple cavity was formed which permitted condensation of the filling, with paper pellets and the mallet, so that by the time it was finished, the filling was dense enough to permit mastication. Another point worthy of special mention in this operation was the use of the separator, by which sufficient space was obtained to permit contouring, in such a way that when the separator was removed after the completion of the operation, the teeth were in perfect contact. On the other hand, at another chair, I picked up the same amalgam which the operator was ready to introduce into the cavity, which was so soft that by throwing it on the table it would flatten out like soft putty. This being put in without a matrix in a compound cavity, neither contouring nor proper condensation could be accomplished. Amalgam in the first case, was made to give its very best service, in the other case it was simply an argument against itself.

One completed amalgam filling turned over to me for inspection revealed the amalgam extending over the cervical margin and up some distance under the gum. For this lapse I could imagine no excuse, as the adjoining tooth was missing, so that the cervical margin could be readily seen and reached. The cervical margin by general assent, is considered the dangerous point in all proximate fillings, hence special care should be applied to this part, both in the preparation of the tooth margin and filling margin.

In the manipulation of the gold in the gold filling, I saw nothing to criticise. The gold was apparently well condensed and the margins seemed perfect. The clinic on gold crown offered one feature specially worthy of note. The cervical edge followed the marginal line of the gingivæ so closely that its adjustment was effected with scarcely any inconvenience to the patient, and without in the slightest degree wounding the gum. The crown was well made, the occlusion good and the adaptation at the cervix apparently all right. The treatment of the marginal line just alluded to, I strongly commend as especially worthy of your imitation. Generally speaking, there is neither rhyme nor reason for driving a band beyond the gingival margin.

The illustration of the Jackson method of regulating by means of piano wires and cribs was very interesting. Its practical application to the patient, showed well its wide range of adaptability, and was a profitable object lesson. There were some operations in extracting, but I made no note of them, and only allude to them here to say that I do not consider this a legitimate feature of society clinics. Our business here is to study how to save, not destroy, and while extraction unfortunately is too often necessary, and it is also true that every one who aspires to the name of dentist should be able to do this well and skillfully, its illustration here in my judgment was to be deprecated, unless there was something new or novel to be offered. Even then one or two cases would suffice for illustration, but to make extracting a prominent feature of a society clinic, is simply to make a free extracting institute out of it.

I congratulate you gentlemen, on the interesting character of your clinics this morning. To the observer with both eyes wide open, there was much of practical benefit to be gleaned, which of course is the main object in view.

C. B. Rohland, Supervisor.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY

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IS THE PROFESSION OVERCROWDED?

In these days of numerous colleges and large classes we hear the cry going up from many quarters that the profession is rapidly becoming overcrowded. The statement is made that even with the present number of practitioners there is a large percentage unable to make a respectable income, and the inference is that if the present influx keeps up, the time will shortly arrive when there will not be a living for all those who are coming in. A superficial view of the situation would seem to lend color to this idea, for surely there never was yet a time in the history of dentistry when anything like the number of candidates sought admission.

And yet we believe that a deeper and more careful study of the situation will prove that the dilemma—if any is to arise—will not exhibit itself in this direction. In other words we do not believe there will be too many dentists. If one stops to consider the amount of dental service that is really required in the community in order to give the people the greatest possible use of their dental organs, one will see at a glance that with the present number of dentists only a very small per cent of that service is rendered.

The question then for us to solve is not in the line of discouraging the admission of new men to our ranks—provided always that they are good men and are properly qualified to practice—but the education of the people up to an adequate appreciation of the necessity for giving the teeth proper attention. How best to do this is a problem that many are considering, and we believe it to be a matter worthy the attention of the very best minds in the profession. It is an undeniable fact that unless we can educate the people in a ratio to meet the demands caused by the present influx into dentistry, the time will come and come shortly when the cry of the alarmist will appear to be well founded. And if that time ever does come it will be largely the fault of the profession rather than that of the people. If a profession has any one function more than another that stands out as its manifest duty, that function is an educational one, and unless we impart some of our special knowledge to the masses, we are falling short of doing what every conscientious man pledges himself to do—either verbally or mentally—when he assumes the duties of a professional life.

The most significant thing connected with the existing lack of dental knowledge on the part of the public lies in the fact that it is not confined to the class of people who are unable to pay for dental services. A great many well to-do people exhibit the densest ignorance of oral hygiene and often the most glaring examples of negligence in this particular are manifest in individuals whose extravagance in other directions is notorious. It is safe to say that if all the necessary dental work was done to keep the teeth of such people in a comfortable and healthy condition, there need be no cause for alarm that the profession was becoming overcrowded. Education is what is needed but the education of the public must keep pace with education in the profession.

How best to reach the public is a matter for consideration and discussion, and the agitation of the question should not be allowed to drag until some definite method be evolved and carried out.

A Model Report.

The report of the Supervisor of Clinics of the Southern Illinois Dental Society published in this issue seems to us to fulfill the requirements of such a report more nearly than any we remember ever having seen. It has been a question of much difference of opinion as to what should properly constitute such a report. The contention has been advanced—and with reason—that a mere colorless statement of fact simply recording the various operations, without criticism, results in little good to the society. On the other hand it has usually befallen that when an attempt has been made to criticise the individual methods or procedures of operators, friction has developed and personal feelings have been injured. It somehow seems to be a fact that a man who will smilingly listen to a sharp criticism of an essay read by himself will instantly change countenance and accept it as a personal affront if a like criticism be made of one of his clinics.

The problem has been to make a report that would be of some benefit to the society and yet not wound the sensibilities of the clinicians. It seems to us that Dr. Rohland has solved this problem before the Southern society and we commend his report as a model for other supervisors to follow. His criticisms are fearless and emphatic and yet they are wholly impersonal. No clinician can justly take offense at anything he says, while the whole society, clinicians and all, may benefit by his observations.

DR. ANGLE'S APPOINTMENT.

The fact that Dr. Edward H. Angle, of Minneapolis, has recently received the appointment of surgeon to the Great Northern railroad, for the treatment of fractures of the maxillæ, comes to us as a cheering bit of intelligence. We believe that this is the first appointment of the kind made by a railroad and it indicates an awakening on the part of these corporations to the fact that such lesions fall properly under the province of the dentist and are usually better managed by him than by the general practitioner of medicine. This not by reason of any lack of intelligence on the part of medical men, but simply because the successful treatment of these cases involves a special knowledge of mechanics and an ingenuity of construction which medical men, from the very nature of their calling, seldom possess. Physicians themselves are fast recognizing this fact, as is evidenced by frequent consultations with dentists in such cases, which is only another indication tending to prove a broadening of the profession and an extension of its usefulness. We offer Dr. Angle our congratulations.

DOMESTIC CORRESPONDENCE.

New York Letter.

New York City, November, 1894.

To the Editor of the Dental Review:

Dental activity is manifested particularly at the depots. We notice some are optimistic and some are pessimistic regarding prosperous times, George Gould, for instance. We wonder what he sees in his sky. Possibly he may not have sea-legs off yet; and then he has lost his centerboard, and all England has not stopped laughing in its sleeve. But the laugh is not all on the other side, for there are Americans laughing over those fat fees they are so quietly putting in their purses. A friend saw one of those fellows with an American degree take a $1,500.00 fee for a beautiful piece of bridge work, and thanks also; and that from a full-blooded Englishman. Why, they know a good thing if they can see it. Some day it will be the other bull which will be gored. Skill makes its own price the world over. We have just had a patient from India who tells us that an American came periodically to the place in which he resided and had his time fully occupied at $25 for a gold filling. Good men are needed in those countries, yet American practitioners slash out natural teeth by the wholesale over there. We have lately put a mouth in order for a lady from there who was advised by three practitioners to have all her teeth removed. The "Rubber Demons" infest everywhere. We filled all the teeth remaining and supplied the lost ones and gave her a full supply of masticators. Our poor old abused world is full of need on this line. Say what we will the commercial age is upon us.

We think, and are not alone in thinking, that a union gathering from all sections of the country every four years at Washington, D. C., is a wise thought. Prof. Winder was ardently in favor of something of this kind, although he desired a reorganization of all our affairs and suggested a body with a permanent president, a purely scientific body, then have headquarters in which the archives could be kept, which in the coming days would be our history. It is about time that we began to place ourselves before the world in a way which will help to establish something of our importance and our benefit to mankind. We ought to have a national organ in which to record our progress. By a wise proceeding congress might be brought to our aid. Many men would be surprised could they visit the army and navy museum and see the vast pile of dental information that is gathered there in printed matter and nicely catalogued. It is hoped that a conference of committees will mature such a movement. This is something that calls for the wisest expression of our ablest members, and if we must have politics let us aim for a crystallizing of something worthy of a reasonable pride. Our Columbian Congress showed what can be done by ambition. So here is another opportunity for a bigger pull on to higher ground. It may look like more than we can chew, but if we get stuck, just "jump the bite." Kingsley did it and now if Case can do it then the great West—that includes Chicago—will buckle down to business.

We have received cards from the Davenports in Paris announcing the extension of their practice into London, not a bad idea. Their name is legion. There are Davenports in New York, in Williamstown, and in South Adams, Mass., and they are a factor both in gentlemanly demeanor and skill. It is not often that so many of kin turn to the same craft. Certainly it is a kind of family unity that can be turned into practical account. All these office interests can be enhanced by this union. At one time in the palmy days of the Odontological Society, of New York, a book was made in which all the members' names and addresses were found, and it was exclaimed that a syndicate was formed with an eye to business.

A practice in Europe can be auctioned off just as a horse can in America. The "idea" is getting into the minds of some on this side. We turn to another way of looking at self-interests. A goodly number have, or can have, more than they ought to care for, and this makes it possible for an assistant. Some give an association, which is more professional. The former means a servant; the latter, a professional recognition. This recalls an incident. We remember a "first-class" practitioner who allowed his student to come into his residence by way of the basement door only. That student's existence was a struggle for life and it all ended by a blow on the back of his head, caused by slipping on the icy sidewalk, leaving his widow and children nothing. He often came to us, and such a hungry fellow he was for opportunities. His master, for that he was, died also, and long obituaries were read over his expensive casket, for he had gathered a fortune. We have not been an idle observer of men's dealings with those that they have called to their aid in our line, and we think that a man who *is* a man will give another an opportunity to rise. There are skillful and worthy young practitioners who are entitled to good places. Dr. Geo. E. Hawes, deceased, well and honorably known, did not miss the *promising* young practitioners but brought them into liberal association of four years each, which proved a financial success for both parties. Dr. Varney, a student of Dr. W. H. Atkinson, took out of his first year's practice after leaving Dr. Hawes $18,000 cash. He made one hour and a half appointments at $18, and collected his bills monthly in all cases. It was a joy to meet him in his practice to note the confidence reposed to him. Dr. Hawes extolled him highly to the patients he placed in his care. Once in his hands they had no use for the old Doctor; this he told us with one of his smiles which spoke more than volumes. We do not share the thought that Dr. Varney sacrificed his life for a false idea, nor did Dr. Webb. No court of justice hands in its verdict until the testimony is all in. They were, it is true devoted to their calling and their teachings were as far-reaching as the other extreme, as taught by our much admired Flagg. None of us can measure the usefulness of either. They have all taught helpfully by their failures. It is not a little amusing what Dr. Talbot tells of the extreme operation by Webb, the last one. It reminds us of another during a clinic at a Pennsylvania meeting where they gave the patient, a dentist, a nursing bottle of milk and went off to lunch, and found him sweetly sleeping on their return. Dr. Webb made that extensive operation in answer to a challenge that he could not put the rubber dam on a tooth shown in a society meeting, because it was so deeply decayed under the gum, but it was not thought that the prolonged operation hastened his end. Excessive use of tobacco injured him. This was his own testimony.

So far we have cause for gratitude that we have so goodly a heritage in these noble examples in excellence ; there are too few of them that we should allow anything to mar their well-earned escutcheon of fame. All honor to them.

We are very glad to note the promotion of Prof. Foster to the vacant place of Prof. Winder, as dean of the Baltimore College. The institution will not suffer by the change. The professor is a clean cut gentleman every time.

Dr. Bogue returned to Paris until November, again to enjoy active practice. We do not fail to note the bright and unique article by the Paris practitioner in the *Cosmos* of September, regarding implantation. It impresses one with a degree of frankness that borders on intelligence, and gives all due acknowledgment to Dr. Younger for honors claimed and merited, so far as they are proved true.

Bourget, the French author, tells a good thing in connection with his visit to America. When he first struck a New York hotel he encountered an ebony hued "gemmen," professor of the whisk broom, with fine, white teeth and gold fillings in them as big as one's finger nail. As I heard a street gamin say once on the sidewalk to a boy who had hunched him a little brusquely, "What are you doing with brass in your teeth," the boy having a large gold filling in his incisor. Just see what a record we are getting in this French tale for making "golden corners."

At the opening of the fall meeting of the First District Society, Victor Hugo Jackson graced the Presidential chair modestly, neatly and promptly in all matters incumbent upon him. There was not a generous attendance—we say generous, for we think it would be a little more generous if the opening of the campaign took on a little enthusiasm. There is no want of full attendance if a lunch is provided, yet it was more than a usual repast from an intellectual view. Dr. Bonwill was at his promised place accompanied by all the proofs that geometry can give. A genial dentist told us this story later: "A physician after reading Bonwill's paper, 'What has Dentistry to Demonstrate against the Hypothesis of Organic Evolution?' said that that man's sanity could be questioned if he had his will contested in our courts." We replied that it is said that "figures do not lie;" and that "you cannot fool with geometry." We congratulate the doctor that he is on record; he can afford to wait the verdict. The ordinary intellect that supports itself to a large degree by compilations of other's doings gets a bit rattled by original mental effect. Only the man who has the science of mental philosophy at command can grapple with such questions. Let us quietly await the verdict of those who have cultivated a taste for these labors; for, surely we have such men, though doubtless they are few.

To day's telegram brings another "Sure Cure."-- "Inoculations for Diphtheria." Prof. Virchow says "No, no, don't be too certain." At the First District Dental Society, we are to have an enthusiastic revival of fresh and stirring demonstrations of practical dental ability, regardless of whom or by whom; provided they have something that is helpful. Another union meeting is on the tapis, and of course a unique lunch, which is hard to be excelled. The Academy of Medicine gives full accommodation for the internal nourishment of man—not beast. New York is always delighted to welcome any of its country cousins. January is the date. Brooklyn is always unanimous for the united cities at these conventions. It does not yet appear just what the Odontological Society has in anticipation for the coming season. Dr. Bonwill flooded them by his thirty-two points included in his essay. The thought seemed to be that it would facilitate the discussions if he could make a résumé; and this is the way he did it, by giving thirty-two points, one for each tooth, Dr. Perry said. Most of the time was occupied by trying to impress Dr. Bonwill that he did too much in the line of assumption. Everything that Dr. Bonwill put forth was literally true and known to him as a fact worked out by years of experience. How few are willing that any should go ahead of them while on the contrary they should be grateful that any can go ahead.

Another new thing—mouth glasses that are guaranteed not to film by the breath for six months. Dr. Hitchcock, of New York, bears the honor of this improvement. He was the inventor of the chuck disk holder, also another new device by which the old time pivot tooth is brought into a more unique use in contrast with the wooden pivot. A German silver form "original" and firmly fastened in by a glass flux. This serves a more economical purpose so far as the first cost goes. We find that hundreds of these teeth are being utilized. Dr. Clowes tells us that he has been accustomed to fit a pivot for each one out of platinum and iridium, and fasten it to the tooth by amalgam.

The method of producing gold plates without dies, is coming very practically into use. They can be completed in minutes instead of hours, ready for use. We have seen some beautiful pieces made in this way. It practically applies to partial pieces only. These were the workmanship of Dr. C. M. Richmond and Dr. Stowell. Their methods differ, but the results are quite similar. This feature of practice we learn, will be emphasized at the November clinic and again at the "Jumbo" union gathering in January. An illustrated record would fasten the verity of the history of these devices, and would help to settle all future controversy. We are on record for cofferdam, in this wise placing us the "original Jacobs."

The argument in the bridge case of Low vs. the original is down for November 5, in the Brooklyn court. "Great expectations" are resting on this decision. It is said that there is scarcely a doubt but that it will result in favor of the dentist. Then how they will take the horses off Dr. Richmond's carriage and carry him in triumph through the land. Long live the man who succeeds—mighty little care about him until that is accomplished. Success is the best evidence of success.

Dr. Taylor, of New York, modestly displayed before the Odontological Society his unique *multum in parvo*. It was a copper box nickel-plated and made into compartments for different temperatures for sterilizing fluid for syringing, keeping mouth mirrors, gutta-percha, etc., ready for use. We think it a valuable article for practitioners who desire neatness, convenience and dispatch in their practice.

We know much of the hard taskmaster, nervousness, and many a time we have been compelled to go aside and pull ourselves together that we might make our service successful. Men that have supreme control over their nerves can little sympathize with those who have not. We wish to note here that some jeopardize their reputation by indulging in excess of habits that do much to enslave them.

Only a few days since we learned of a valuable patient leaving a practitioner because of his shaking hands and saturated stench of tobacco smoke. One of our much esteemed fellows (then at the time with a large and lucrative clientele) said during a call, "I have had within a short time added eleven families of wealth by the indiscretion of a practitioner standing by his chair and picking his teeth with the same instrument that he was using for the patient." We cannot afford to become indifferent in our practice. With this we will state a fact that was given in one of the Brooklyn meetings by the late Dr. Fry—known by many as the "Commodore." He owned a yacht and took yearly many of his dental friends sailing. He was asked by a lady inquiring the price of artificial teeth, "Why do you charge so much more for your teeth than your neighbor on Fulton Street?" "Oh," said the doctor, "It would not do for me in my practice to use second hand teeth."

Quid Nunc.

EDITOR DENTAL REVIEW: ST. LOUIS, October 13, 1894.

Dear Sir : In the September number of the DENTAL REVIEW, page 617, I find that Dr. Arthur B. Freeman makes the statement that "so far as I have been able to ascertain, root filling was first practiced and introduced in 1840 to 1845 by Dr. Maynard, of Washington D. C. His original method was the mechanical cleaning of the canal, slight enlargement, and the introduction of a gold filling from apical foramen to pulp chamber."

In the *Archives of Dentistry*, October 1886, page 475, there was published an itemized bill which shows that this identical method of filling roots was practiced by Dr. Edward Hudson as early as 1824 or 1825. The following is the bill in full :

"Miss Margaret Calender's account with E. Hudson.

November 1824
December 1824
January 1825
April 1825

Extracting eight teeth	$ 8.00
Stuffing seventeen cavities with gold	85.00
Stuffing the cavity of one tooth from the end of its roots with gold	10.00
Cleaning her teeth	5.00
Cutting out four decays	4.00
	$112.00

Received in full,
EDWARD HUDSON."

The bill is authentic, and thinking it might be of interest to Dr. Freeman and other readers, I take the liberty of sending you this item.

Yours Truly,
EMMA EAMES CHASE.

REVIEWS AND ABSTRACTS.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH. By G. V. BLACK, M. D., D. D. S., Sc. D. Third edition, Pp. 171. Price, $2.50. Published by the Wilmington Dental Manufacturing Co., Philadelphia. 1894.

The fact that a third edition of this work has thus early been called for proves two things, first, that such a work was required, and second, that the present work fills the requirement. It is not too much to say that Black's anatomy is to the dental profession what Gray's anatomy is to the medical profession. No dental student can lay a proper foundation for his future work without a careful study of this book, nor will the practitioner of years' experience find it amiss to occasionally review its pages. The principal changes in the third edition relate to the nomenclature. As the author says in his preface, "The steady progress of dental nomenclature toward more exact forms demands this." In addition, some improvement has been made in the descriptions, and a number of new illustrations have been introduced. We cannot too highly commend this work to the consideration of progressive men in the profession everywhere. To the teacher and student it has become a necessity.

A COMPEND OF DENTAL PROSTHESIS AND METALLURGY. By Geo. W. Warren, D. D. S., Chief of the Clinical Staff Pennsylvania College of Dental Surgery, Philadelphia; Author of "A Compend of Dental Pathology and Dental Medicine;" Editor of "Richardson's Mechanical Dentistry," etc. Pp. 265. With 129 illustrations. Cloth, $1.50. Published by P. Blakiston, Son & Co., Philadelphia, 1894.

In a brief space the author has considered a great variety of subjects. He deals not only with the construction of artificial dentures on the various bases, but considers briefly obturators and artificial palates, interdental splints, appliances for the correction of dental irregularities, and crown and bridge work. Besides this, a considerable portion of the work is devoted to dental metallurgy. The latter contains a great deal of information in a small compass, and in fact the whole tenor of the work is in the direction of concentration. In this the book forms a worthy example for latter-day authors to follow. The quality of knowing when to stop is as essential to effective writing as it is to know what to say. It is true that in the description of some of the methods there is a sense of lack of detail, but in the main the statements are clear and comprehensive.

This is not the first work in this line that Dr. Warren has done, and the present volume carries about it the earmarks of previous experience in book-making.

THE ANATOMY AND PATHOLOGY OF THE TEETH. By C. F. W. Bödecker, D. D. S., M. D. S., pages 676 with 325 illustrations. Adopted by the National Association of Dental Faculties as a Text book for Dental Students. Published by the S. S. White Dental Manufacturing Company, Philadelphia, 1894. Cloth, $5.00.

Here is a work that cannot be lightly passed over. When a man has spent all of his leisure time during nearly a decade in the production of such a work, as has Dr. Bödecker in this instance, the profession may well look for something substantial. And when this well bound volume is opened something substantial is encountered. It is probably the most pretentious effort along this line of investigation that has ever been presented to the profession. The first thing that impresses the reviewer after a careful examination is the utter hopelessness of imparting to the reader an adequate idea of what the book is like. Probably a recital of the different subjects treated will convey the best idea as to the scope of the work. There are 48 chapters in all and such topics as the following are considered:

The maxillary bones. The teeth. Individual characteristics of the teeth. The pulp-chambers of the teeth. The articulation of the teeth. General anatomy of the human teeth. General histology. Development of connective tissue. The minute structure of dentine, enamel and cementum. Synopsis of the development of the teeth. Development of dentine, enamel and cementum. Faulty development. The development of teeth in embryos affected with rhachitis. The dental pulp. The pericementum. Eruption of the teeth. Absorption of temporary teeth. Physiology of the hard dental tissues. General diagnosis of the diseases of the teeth. Irritation and new formations of dental tissue. Secondary dentine. Mechanical abrasion. Erosion. The reaction of the dentine upon fillings. Hyperostosis of roots of teeth. Inflammation. Inflammation of the gums—ulitis. Inflammation of dentine—eburnitis. Pulpitis in its clinical aspects. Morbid anatomy of pulpitis. Degenerations and atrophies of the pulp. Morbid anatomy of atrophies and degenerations of the pulp. Pericementitis, its clinical aspect and morbid anatomy. Caries of the teeth. The effects of arsenic dioxide and metallic arsenic upon the pulps of the teeth—so-called coagulation-necrosis. Necrosis of the jaw bones. Empyema of the antrum. The clinical and anatomical features of tumors in general. Tumors of the teeth and jaws. Cysts. Malformations and malpositions of the teeth.

In addition to this array the author has supplemented his work by giving more than fifty pages to the literature of the subject, naming the authors, their topics and where published.

The work as a whole will make permanent literature for dentistry—not that the views of the author will pass without criticism, for Dr. Bödecker belongs to a school of investigators who are calculated by their opposition to the cell theory to invite a difference of opinion. Nor will such methods as the capping of pulp stumps after the application of cobalt be received with favor by the profession generally. But this book is such a bold, strong statement of one side of the question that it must command the attention of thinking men—and as the author intimates, it was written for none other.

The mechanical execution of the book throughout is excellent. The illustrations (the work of Prof. Carl Heitzmann) are unusually good, and the type bold and clear. Altogether, both publisher and author may well be congratulated.

PRACTICAL NOTES.

A Case in Practice.

By Dr. W. F. Green, South Evanston, Ill.

Dec. 24, 1892, Mr. C. L. B., hardware merchant, age thirty-two, weight 185 pounds, dark complexion and suffering from nervous prostration, was referred to me by his physician for an examination of his teeth, as he had been for two weeks a martyr to neuralgia.

The paroxysms of pain were nocturnal and involved at different times one side of his face, then the other, then the lower teeth and again the upper teeth. Sometimes it would involve only the temples and eyes, and again the entire head and face. The pain was severe.

Consultation with his physician indicated that there was no specific taint to account for this or subsequent trouble.

Upon examining his teeth I found a number of cavities, all small, and not sensitive. During the following week I filled these with amalgam and thoroughly cleaned his teeth. At each setting (the neuralgia not improving) I was particular to percuss the teeth and at no time was I able to detect any undue tenderness. Jan. 21, 1893, he returned and requested me to examine the right upper third molar more closely, as he believed that was the one at fault. Since the last filling was put in, the pain always started from that tooth, so he had come to have it extracted. Upon this he insisted and against my judgment I extracted it.

Imagine my surprise (for I think I can detect an abscessed tooth as soon as the average dentist) when I found a well-developed abscess situated in the bifurcation of the roots. The pulp was thoroughly alive and had no connection with the abscess that I could distinguish. Why was elongation and tenderness absent? I requested him to report next day. He reported on the 26th, having had an attack of neuralgia the night previous, the first since the extraction. Upon examination I found the process around the posterior buccal root of the second molar carious, and so informed him. I extracted this tooth also, and burred out, as I thought, all the process involved. I cleansed the wound with bichloride of mercury, 1 in 1000, dressed it with carbolized cotton, and requested him to return next day for further treatment.

Jan. 24, 1894, he walked into my office saying: "That place hasn't healed up yet and now the other tooth is so sore I can't chew on it."

This time I found the entire process around the first molar involved and the external plate of the process as far forward as the septum between the bicuspids, so I decided to treat it heroically. I extracted the first molar and removed the process lying over the buccal surface of the second bicuspid root and back to a point corresponding to the septum between the first and second molars. After all carious bone was removed I ligated the two bicuspids to the cuspid, thoroughly cleansed the wound with bichloride of mercury 1 in 1000, replaced the flap of membrane, applying pressure with a small roll of carbolized cotton supported by a narrow bandage externally. I redressed the wound every day and maintained pressure till I succeeded in having all the flap reunite, except the posterior inferior corner which was removed.

These local treatments were continued till Feb. 10, when I discharged the case. At the present time, Oct. 13, the second bicuspid is firm, having dropped forward till it rests against the first, although the posterior surface of the root is bare for three-fourths of its length. The surrounding tissues are firm and healthy.

MEMORANDA.

Dr. L. P. Bethel, editor of the *Ohio Dental Journal*, made a brief visit to Chicago recently.

Dr. Geo. A. Christmann, of Chicago, has been appointed a member of the Illinois State Board of Dental Examiners to fill the vacancy caused by the expiration of Dr. Huxmann's term.

We had promised to publish the entire transactions of the Minnesota society in this issue, but the length of the proceedings together with the press of other matter made it necessary to let part of it run over till another month.

THE NORTHERN ILLINOIS DENTAL SOCIETY.

The recent meeting of this society at Aurora was a very successful one. The papers will all be published in a subsequent issue of the DENTAL REVIEW.

THE ATLANTA DENTAL JOURNAL.

A new applicant for favor. Published at Atlanta, Ga., by Browne & Owings Dental Co. and edited by Walker G. Browne, D. D. S. To be published quarterly at 50 cents per year.

THE OHIO DENTAL SOCIETY.

The next annual meeting of the above society will be held at Neil house, Columbus, Ohio, December 4, 5 and 6, 1894.

J. R. CALLAHAN,
Chairman Executive Committee

THE HORACE WELLS ANNIVERSARY CELEBRATION.

We commend to the attention of our readers the following circular which explains itself. We trust that this celebration will receive the hearty support of every dentist. It is an occasion that should call forth the patriotic pride of every member of the profession wherever located. Let the West join with the East, the North with the South—let us all join together to make this an epoch-making event in the history of dentistry:

DEAR DOCTOR:—You are doubtless aware of the action of the American Dental Association at its recent meeting held at Old Point Comfort, Va., with reference to holding a National celebration of the fiftieth anniversary of the discovery of the anæsthetic properties of nitrous oxide, by Dr. Horace Wells.

The committee by vote of the American Dental Association was instructed to secure two papers to be read at the celebration, one upon the *History of Anæsthesia*, by Prof. Thomas Fillebrown, of Boston, and one on the *Benefits of Anæsthesia to Mankind*, by Prof. James E. Garretson, of Philadelphia. The committee was further instructed to arrange for a banquet to follow the meeting, at which distinguished speakers shall make appropriate addresses. A full report of the celebration, including the papers and addresses to be printed and issued, as a permanent souvenir of the occasion. Arrangements have been completed to the extent of securing favorable responses from the essayists named whose papers are now in course of preparation.

The banquet arrangements are also largely completed. To cover the expenses attending the celebration the fee for admission to the banquet has been placed at $6 00 It is necessary that the committee shall have ample notice of the number who will be in attendance in order that places may be provided for all who may desire to attend. Subscriptions will be invited later for the souvenir volume at a price sufficient to cover the cost of publication.

The celebration will be held in Philadelphia, in Association hall, 15th and Chestnut Streets, at 2 P. M., on Tuesday, December 11, 1894. The banquet at the Union League at 6:30 the same evening.

You are cordially invited to participate in this event, which should enlist the enthusiastic support of every member of our profession. To that end you are requested to send your check and notify the chairman of the Anæsthesia committee at the earliest date possible in order that an official invitation may be sent to you.

It will be proposed at the meeting that subscriptions be invited for a permanent memorial, to take such shape as the meeting shall decide.

Signed,

Louis Jack,
E. T. Darby,
C. N. Peirce,
D. N. McQuillen
E. C. Kirk,
S. H. Guilford,
Wm. Carr,
A. L. Northrop,
H. B. Noble,
Jas. McManus.
J. D. Thomas, *Chairman*
912 Walnut Street, Philadelphia.

AN ELECTRIC FURNACE FOR BAKING PORCELAIN.

After working for a number of years Dr. W. H. Taggart, of Chicago, has perfected a furnace for baking porcelain by electricity. This furnace is to be entirely automatic in its working, so that when the apparatus is set it will automatically control and regulate the heat, and after the required number of minutes will close the circuit, making it impossible to overbake the porcelain. In other words it will be as automatic and accurate as the modern time and heat regulating vulcanizer.

The one thing more than all others that has kept porcelain work from taking a prominent place in dentistry has been the fact that there was no suitable furnace for this work. A number of furnaces are on the market, but they are all open to one or another of the following objections: "gasing" the porcelain, excessive consumption of fuel, thereby heating the laboratory, or unpleasant noise from having to force combustion by a blower. All these objections are done away with in this electric furnace, as all that is necessary to do is to connect the cord with an ordinary incandescent light socket, and the highest fusing porcelain can be baked in from three to five minutes after the muffle is white hot. This takes about ten minutes and all can be done while the furnace is held in the bare hands. As there is no combustion there can be no gases to mar the beauty of the porcelain, and no excessive heat or noise. It would seem as if this process will almost revolutionize the making of porcelain for dental purposes, as well as for jewelers and enamelers.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

The Delivery of Force by Plugger Points.*

By Edward A. Royce, D. D. S., Chicago, Ill.

Mr. President and Gentlemen: It is the privilege of every man in this liberal profession of ours to plough a little in theoretical fields if he chooses, and if, by chance, he finds some good soil it is his duty, be he an amateur or a professional farmer, to sow. If the ground has been carefully prepared his harvest will repay him for his trouble, but if he has done his ploughing carelessly, the result will not be what he expected. Scientific facts cannot be established by innuendoes, dogmatic assertions or partially presented examples. It is only by the most carefully conducted experiments and thorough investigation that correct conclusions can be arrived at.

In the May number of the Dental Review was published a paper which was read before the Hayden Dental Society, entitled, "Some Thoughts on the Behavior of Gold under the Plugger." This paper treats of a subject which I have investigated and upon which I have written, but the declarations of this writer are so at variance with the published results of my investigations that I have been persuaded to place before you further evidence of the correctness of my conclusions, and I feel obliged to call your attention to some of the assertions contained in this paper. The statement of this writer that the terms "spread" and "crawl" are used without knowledge of their meaning, would indicate that he thought the dentists who believe that gold will spread under the plugger point have no dictionaries. Webster gives this very concise definition for the word "spread"—"To extend in length and breadth, or in breadth only." I for one am satisfied with that definition. To my mind the word "crawl" does not express the meaning as well as creep, which means: First, to move along on the ground or any other surface as a worm or reptile does; second, to move in a stealthy or unobserved manner; to move secretly so as to escape detection or suspicion.

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*Read at the October meeting of the Odontological Society, 1894.

The principal arguments in the paper referred to were based first, upon a comparison of the manipulation of gold by the gold beater and the dentist; and second, upon the delivery of force by the plugger point. Let us consider the gold beater first.

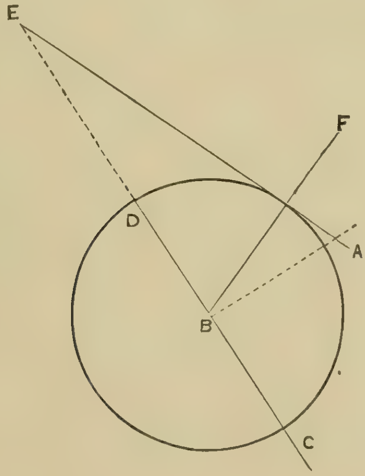
The statement that the gold beater has provided space for the gold to spread is true. If a man wishes to spread a piece of gold that is one inch square to four and three-fourth inches square, he would be a very poor mechanic if he did not give it room in which to spread to the size he desires, but the next assertion of the writer is this: That the gold beater can spread the gold because he applies force over the entire surface of the gold to be spread, which would be four and three-fourths inches square, while with the dentist the gold will not spread because there is only a small point of contact. Now the fact is, that the face of the gold beater's hammer is from four to four and three-eighths inches in diameter, but that face is oval and the size of the actual point of contact is about three-fourths of an inch. My authority for this statement is one of the largest gold beaters in this country, from whose letter I will quote the following: "The size of the point of contact between the hammer and the pack, when a blow is struck in beating gold, depends somewhat upon the force of the blow, but will average a circle of about three-fourths of an inch in diameter." It is particularly unfortunate that a paper should be presented to a society of young men, the conclusions of which are based upon observations so superficial that an inaccuracy of four inches in the measurement of four and three-fourths inches is found. I am sure you will agree with me that it would be a waste of time to try to refute arguments or statements made with such a foundation.

The delivery of force by the plugger is the second point in his paper from which I will quote the following: "Force from a plugger point will be expended in the direction in which it has received its impetus and none other. The law of physics governs that point beyond the intervention of any theory of ours. Instead of gold spreading under the plugger I have cited to you reasons why identically the opposite is true." After some consideration I wrote to the editor of the REVIEW asking for the law upon which this assertion was based. The following reply was published: "The statement is so simple and self-evident and the law referred to so well known that it did not occur to me necessary to cite authorities or burden your pages with a republication of Newton's Laws of Motion, which may be found in almost any elementary work of natural philosophy or physics," followed by a list of authorities and reference to Newton's Second Law of Motion. I have been familiar with Newton's Second Law of Motion since school boy days, and this new application of the law, that force delivered by a mallet to any plugger will be delivered directly ahead of the plugger under all circumstances, may be "simple and self-evident" to one who has done his ploughing carelessly, but closer investigation would have shown the writer that force delivered by the plugger point and force delivered by the mallet may be two very different forces. We find Newton's Second Law in two forms, first, "Every motion or change of motion is in the direction of the force impressed and in proportion to it;" second, "A given force will produce the same effect whether the body on which it acts is at rest or not, whether it is acted on by that force alone or by others at the same time." Take as an example, if I strike a marble with this mallet, the motion of that marble is in the direction of the force impressed and in proportion to it. Again if I strike the marble it is started in the direction of the force impressed, but this block is placed so as to impress another force, that of resistance, so the motion of the marble is changed in its direction by the new force impressed, but does that govern in any way the delivery of force by the marble to the block? One of the examples used to illustrate the second form of the law is this: An orange thrown into the air by a man sitting in a wagon can be caught by the man whether the wagon be moving or not, the motion of the wagon not affecting the force exerted upon the orange by the man. But how does this law affect the manner in which the surface of that orange delivers the force to the air in order to displace it enough to afford a passage way for itself?

It must be remembered that laws in physics are universal.

What applies to a wedge used out of the mouth applies to a wedge used in the mouth. I present to you a wedge-shaped instrument that has been used by me for a gold plugger for some time. A wedge is a double inclined plane. The inclined plane in its resistance to gravity resolves that force into two forces, one of which is perpendicular to the face of the plane and is destroyed by the plane; the other force parallel to the plane is what causes the ball to descend to the foot of the plane. Now the law given in Quackenboss for the wedge is about like this: The force is increased as many times as one-half the thickness is contained in the length of the wedge, so if a wedge is two inches thick and ten inches long, one pound blow upon that wedge causes the wedge to exert ten pounds of force and that force is exerted at perpendicular or right angles to the plane. If one pound of force is exerted upon the wedge it moves in the line of impetus until it meets a resistance of one pound in a direction opposite to the line of impetus, or is acted upon by some other force, according to Newton's Second Law of Motion, but this law does not control the delivery of force by the wedge. Measurements of this instrument show that its length is six to thickness two. Now the force is increased as many times as one-half the thickness (or one) is contained in the length, which is six; so if I exert one ounce of force upon the plugger to drive it down between the cylinders in noncohesive gold, I exert six ounces of force to drive the cylinders to the walls of the cavity. Of course the tooth as related to its socket receives one ounce of force and that ounce in the line of impetus.

Take for another example a four-oared shell, which is we will say, two feet at the beam and will draw four inches of water, and with the usual tapering ends has a displacement of eight hundred pounds. Beside this place another boat with a beam of two feet and draft of four inches, but the sides of the second boat are to be made parallel and long enough to have a displacement of eight hundred pounds and the ends flat. Let the crews be equal in strength and skill. Now if these two boats were to try a race is there a man in this room who would expect the flat-faced boat to win? Yet according to the new law which has been launched upon us it should have an equal chance for the water has to be moved in each case far enough to allow a boat of a two-foot beam and four-inch draft to pass, and if the force is applied in the line of impetus and in no other direction, the force is applied in the same direction and manner in both cases. But as every one knows the flat end boat would be left far in the rear for the force of the other is applied at right angles to the surface of the inclined plane and is increased as many times as one-half the thickness of the wedge is contained in the length of the incline, so the force is not only applied nearly in the direction that the water must be moved to let the boat pass but is increased at the same time so that the impetus given to the boat will displace a very large quantity of water before the resistance in the opposite direction to the impetus, will equal the impetus and bring the boat to rest. The force of a flat faced boat is delivered directly ahead in the line of impetus and both boats, according to Newton's Second Law of Motion, move in the direction the force is impressed and in proportion to it.



In Norton's Natural Philosophy, p. 103, Note 210, occurs the following : "If the resistance of the given plane surface be taken as unity, an umbrella of the same area of section at the tips will meet with almost double (1 94-100) the resistance when the concave surface is presented to the air, and only about three-fourths (77-100) when its convex surface is presented." While we all know this is true, perhaps few of us could readily tell why it is so. It is an admitted fact that the force of an inclined plane is exerted or delivered in a line perpendicular to the plane and it has been my aim to prove that this is the case with all faces that deliver force. I have solved the problem in the following manner: Suppose we take a circle and find the direction of the delivery of force by a point of the circumference of that circle.

We will draw a circle and let the diameter D C represent the line of impetus and select point X as the point for the delivery of the force and draw radius B X. Through the point X we draw a tangent to the circle, it will give equal angles and right angles, E X B and B X A; extend D C till it intersects tangent at E; now the point X is not changed a bit in position, form or relation to the line of impetus, which relation is shown by line B X, but it has become a point for delivery of force, not only for the circle, but for the inclined plane E A and the force is delivered at perpendicular to the plane. The same point delivers the force for the circle that delivers it for the plane and the relation to the line of impetus is the same in both cases, therefore the delivery will be the same and the force will be delivered in the direction indicated by the extension of radius B X, which is also perpendicular to the plane before spoken of.

I have here a block, the face of which is a segment of a circle, and two wedge-shaped blocks, the faces of which represent tangents to the circle. If we deliver force to marbles, bullets or dice by points upon the surfaces of these blocks corresponding to point X of figure, the objects will be sent in the same direction whether the force is delivered by circle or plane.

Now, in the case of the umbrella, the force exerted upon the handle is delivered to the air in a line perpendicular to the face at the point of delivery, so it is not only exerted more nearly in the direction the air must be moved to allow passage of the umbrella, but is increased at each part of the surface as it would be for an incline, the plane of which would be a tangent to a circle of which the part of the umbrella delivering the force would be a segment. The umbrella and flat surface will move in the direction of the force and in proportion to it, but not the same distance with the same force because they do not deliver the force to the air in the same manner. There is another very familiar example of this delivery of force which has been spoken of in some of the discussions.

If a mechanic wishes to spread a rivet so as to make it approximate closely to the sides of the hole through which he has pushed it, he strikes this rivet a few sharp blows with the round face of his hammer. Perhaps you have all seen this done, but did you ever see a workman who could tell you why the rivet spread more with force delivered by a round-headed hammer than a flat one? I have asked that question time and again, but I never received a satisfactory answer. They know the effect and they use and depend upon the force. It is not necessary to go into detail in regard to the delivery of force in this case. It can be shown just as in the case of the umbrella, that it is delivered in a direction perpendicular to the face at the point of delivery.

I have prepared about two hundred experiments, tending to prove my claim that all force is delivered in a line perpendicular to the surface at point of delivery. In preparing the surfaces with which to deliver force and those to receive or be acted upon by force, it must be remembered that any point that delivers a force is either a point in a straight line or a point in a segment of a circle, as all lines can be drawn with square and compass. We have thirteen blocks shaped so as to present flat face, wedge shape, ovals, segments of circles, double curves and concaves. The objects to receive the force are flat faces, dice, round bullets and marbles. The force can be delivered by hand or mallet to the plugger handles that are so fastened to the blocks as to make exaggerated plugger points three and one-fourth inches across. First we take one marble and deliver force to it by striking a blow with the mallet. Try all the shapes and the different portions of the faces, then take two marbles and use different parts of the face and note the result. The bullets I have flattened on one side so they will not roll. Take one, then two, then a row that will reach across the face of the blocks three and one-fourth inches and deliver the force by gentle taps. Try dice in the same way. Drive the marbles, dice and bullets into putty or use sand or marble dust and a foot rule is accurate enough to measure the difference in the action of the flat, oval, round, and wedge-shaped faces. In all of these experiments it will be found that the direction of the force exerted depends not upon the line of impetus, but directly upon the shape of the face that delivers the force. Suspend one of the dice and then a bullet and deliver force to them with a sharp, quick blow. A careful observation will clearly show that the force is delivered in a line that is perpendicular to the face that delivers that force. I think all will admit it is fairly proven that an oval face will give force in a direction according to the face. Now the question that comes to us is this: Is that force sufficient to move the particles of gold in that direction?

As you all know, the greatest value of this application of force is to the gold that is being condensed and so far I have been unable to devise any way to show the spreading during that process, but if the force is sufficient to spread gold that has been condensed and it can be coaxed up to the walls of the cavity, how much more readily it will be manipulated in the same direction by the same force during the process of condensation; therefore, to show that each blow from the mallet, as I use it, has its effect upon gold, I present to you specimens, some of which you may have seen before—others are new.

Remember I do not recommend you to use your scrap gold to fill cavities in teeth because I show what can be done with an old filling, nor do I present to you a new filling material in the copper rivet that I exhibit, but I show these to let you see that each stroke of the mallet, if rightly used, will produce its effect upon the gold as it is being condensed in filling.

The first sample is one that I showed a year ago. It is a filling that was worn in the mouth twenty-seven years, and upon removal I placed it loosely in a cavity drilled in a toothbrush handle. One end was wired while the mallet was used upon the other, showing how little attention was paid to cutting the cavity to the size of the filling. The same blow that I use in the mouth adapted the edges of this filling to the margins of the cavity. As there seems to be a wrong impression, let me say that I do not claim that the filling fits the cavity perfectly for the spreading gained by an oval-faced point cannot be deep in the gold, but is at or near surface. To be sure that I had a fair trial for the next case, I put a large filling under the blowpipe and melted it, then cut a cavity in a tooth, beveled the edges, put this globule of pure gold into it and began flattening the gold and coaxing it over the edges. I used the same blow of the mallet that I use in the mouth much of the time, and for an anvil I used the ball of my thumb, thinking the socket of the tooth as firm as that. As you will see by an examination of this gold, the blows delivered by the mallet to an oval-faced point, not only flattened out the oval projection of gold from the cavity but it was coaxed over the beveled edge for one-sixteenth of an inch. Still the limit had not been reached, for as we all know gold is the most malleable of metals.

Next I present a sample of the way copper can be manipulated. I found a brass tube with very heavy sides through which

I drilled a hole; into this hole I pushed the copper rivet. The rivet was not long enough to pass entirely through from side to side of the tube but reached through the first wall of the tube and only half way through the second. The end of the rivet was smaller than the hole in the brass so I could put a thickness of letter paper around it. Force was applied as it is delivered by an oval point. The mallet was used and the ball of my thumb again acted as the anvil. As you can see the copper was forced up to the walls of the cavity. If force is delivered by an oval-faced point at an angle to the line of impetus as I have shown, and that force is sufficient to change the position of the particles of gold as the samples prove, if the particles of gold are not driven to one side or in a direction more or less toward the walls of the cavity, where do they go and what is the mechanical law that governs their movements?

Now Mr. President and Gentlemen, it is to me very "simple and self-evident" that, according to Newton's Second Law of Motion, the gold will be driven in the direction that the force is exerted, not upon the plugger but upon the particles of gold and if you try to condense a piece of gold that is just one sixteenth of an inch square and particles of gold are driven to one side ever so little, is not that piece of gold spread during condensation? Not spread into inaccessible places or under overhanging walls of enamel that should be cut away, not as a substitute for the pull plugger, not to the size of the product of the gold-beater, not with the shock to the frail enamel walls that would be caused by the direct application of force toward those walls by a flat-faced point, but by the use of oval-faced points the gold can be coaxed up to the walls of the cavity as it is being condensed, and after it is once placed, the direction in which the force is applied during the condensation of other pieces tends to drive it closer to those walls. If we would have the perfect working of gold over the margins of the cavity, the spreading force is absolutely indispensable and the only way in which this force can be obtained is by the use of instruments, the outlines of which are based upon scientific principles.

PREPARATION AND FILLING OF PROXIMATE CAVITIES IN BICUSPIDS AND MOLARS.*

BY E H. ALLEN, D. D. S., FREEPORT, ILL.

This subject is of the utmost importance to all members of the dental profession.

I do not know of any class of cavities in the teeth, that we as a profession are called upon to treat and fill, that are surrounded by so many adverse conditions wherein so many failures result, as we find in the class of cavities taken as the subject of this paper; nor do I know of any class that are more difficult to prepare.

It seems so necessary that the utmost care be given from the beginning to the end of the operation, that too much stress cannot be laid on the subject. Is it not best therefore to have some system with general rules to govern the preparation of these cavities? The place where decay usually occurs is at the point of contact with the adjoining teeth, and not infrequently both teeth are decayed at this point.

The first thing to do is to get sufficient space by wedging. Get it with any method that seems efficient, but be sure to avoid soreness as far as possible. Securing a suitable space is very important. Without it the cavities cannot be properly prepared, nor can the fillings be successfully inserted, finished or polished.

Also be sure to wait until the teeth are fully recovered from the sore effects of the wedging. I would say in connection with this subject, that I have never found any of the various separators that secured sufficient space, without, as it seemed to me, endangering the teeth and the alveolus. While some patients object to separation, I do not think any intelligent and sensible one, who has the salvation of his or her teeth at heart, will object when once the object of such separation is explained.

After space is gained, adjust the rubber dam. It is impossible to properly prepare such cavities with the saliva and tongue getting in the way and obscuring the work. Neither is it cleanly.

Next take a *sharp* drill or bur, and open into the cavity through the occlusal surface; do this almost invariably, because in so doing you can get easy access and good light to all parts of the cavity. Such was the practice of the late Dr. Marshall H. Webb, and I am sure that as an operator in gold fillings, he had not an equal before him, and I am not personally acquainted with his equal of to-day.

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*Read before the Wisconsin State Dental Society, July, 1894.

Many other excellent operators believe in and carry out the same practice. With burs and chisels cut out the decay and extend the boundary of the cavity until sure that after it is filled, and the teeth resume their normal position, none of the tooth structure will come in contact. Have the side walls of the cavity nearly parallel. Leave no overhanging edges of enamel at the occlusal surface, as it would be difficult to fill above them. I usually cut out the fissure across the occlusal surface, if it has not been filled previously.

Now look over the work carefully and dress up the edges of the cavity, and get the outlines symmetrical. Avoid sharp angles; get every part of the margins accessible, so that the cavity can be easily filled. Next cut the retaining grooves. Do not cut deep grooves; they add nothing to the strength of the walls, and are difficult to fill. In the occlusal surface cut a dovetail groove, then take a round finishing bur, about No. 50 stone cut, (the dental depots do not keep them in stock, get them by special order) and carefully bevel the margins of the cavity. Make whatever starting point you may need for gold, and lastly, polish the edges with a 00 sandpaper disk, or other fine tape, and the cavity is ready to fill.

The foregoing describes the method of procedure for a small cavity, which requires considerable cutting to produce the proper outline, but where caries is more extensive, removing the decay takes the place of cutting away. Avoid, however, frail enamel walls; be very careful about the cervical margin; remove all decay and have that margin smooth. Sometimes bicuspids are badly decayed and one or both cusps are frail. Cut them a little shorter and build the filling over the edges. In cases where bicuspids have cavities on both proximate surfaces, when the decay is not extensive the cavities may be filled at different sittings, but when the decay is quite extensive the fillings should be united across the occlusal surface. The cavity being prepared, the next consideration is the filling.

What material should be used? I would in the majority of cases fill with gold, provided money was not an important factor. There are, however, exceptions. First, if the cavity be so large that the case is on the border line between filling and crown work, where the success of the filling would be a matter of doubt, then I should fill with amalgam or possibly with cement. Second, if the cavity be difficult of access and there is doubt regarding the ability of the operator to properly reach every portion of it, then fill with amalgam or cement, for a good amalgam filling is better than a poor gold one. Third, when the rubber dam cannot be applied so as to insure a perfectly dry cavity.

Under these three conditions then would I fill with some material other than gold. But in ordinary cases I challenge any one to name any material that will stay in place so well and preserve the tooth from decay so long as gold, when properly and thoroughly manipulated. I would advise every operator to use that form of gold which best suits him. For myself I use in most cavities of the upper teeth cohesive gold in shape of ribbons and condensed with the Bonwill mechanical mallet. But when filling a cavity on the distal surface of a lower bicuspid or molar, I use a matrix with gold in soft pellets. In either case great care should be used to carefully and thoroughly condense the gold against all parts of the cavity, and also that the natural contour of the tooth be restored. Do not allow the filling to have a flat surface, but a rounded one ; then as the teeth resume their normal position the fillings will knuckle together near the occlusal surface, or if but one filling has been inserted it will knuckle to the adjoining tooth. The object to be attained by all this is to change the conditions that caused decay in the first place.

If these cavities have been prepared properly the tooth structure will not come in contact, and with reasonable care on the part of the patient this method of filling will insure freedom from further decay. At least it will do so longer than by any other method.

For filling with amalgam the same care should be observed in the preparation of cavities as for gold. A matrix can be used to give contour. After the amalgam is hardened it should be polished as carefully as gold.

HYPNOTISM.*

BY DR. H. H. FITCH, PEKIN, ILL.

Hypnotism, which is an artificially produced catalepsy, has recently been strongly advocated as a substitute for the commonly used anæsthetics, chloroform, ether, nitrous oxide, cocaine, etc. It does not come to us as a recent discovery, either in the principle or the detail of application. In the *Arena* for August James R. Coke says "I have used hypnotism in minor dental operations, extracting teeth, etc. It is more efficient and lasting than nitrous oxide gas and leaves no disagreeable effect." "A physician attempting·any surgical operation and using hypnotism as an anæsthetic must be sure that the patient is fully unconscious. This knowledge can be gained by the use of Faradic electricity applied with wire brushes. The patient may be semiconscious and feel pain and yet be unable to make it known by outcries or gestures. But if electricity be used the face will be so sensitive that an expression of pain or other evidence will be given; if he be wholly unconscious there will be practically no change of expression when the brushes are applied to the supraorbital nerves." * * * *

"In very susceptible persons the hypnotic state can be prolonged for a number of hours, some forms of it very closely resemble the condition known to medical men as catalepsy, if indeed the states are not identical." He also states, "I believe from experience that hypnotism can and will supply the place now held in medicine by morphine or other opiates, in at least from 75 to 80 per cent of all the cases in which these and similar drugs are used." Thomas King Chambers, M. D., F. R. C. P., Reynold's System of Medicine, Vol. 1, p. 656, remarks "Catalepsy seems sometimes to be voluntary, or at least capable of being brought on by very little external aid." "Of this St. Augustine gives an interesting instance within his own knowledge: There was a certain priest by the name of Restitutus in a parish of the diocese of Calami, who, when he pleased, and he was often asked to do it by those who wished to have ocular demonstration of the strange fact, just by having a noise like as of somebody crying, used to convey himself out of the influence of sensation and lie like a corpse, so that not only was he insensible to people pinching and pricking him, but sometimes fire has been brought and he burned with it, without any sense of pain, except from the wound afterward ; the body seems to be motionless, not in consequence of any voluntary effort, but from want of sensation, as was made the more probable by the absence of any appearance of respiration as in a dead body, yet peoples' voices, if they spoke out very clear, he said afterward, he could hear as if they were a long way off." Augustine De Civitati Dei, lib. 14, cap 24.

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*Read before the First District Dental Society of Illinois at Peoria, September 12, 1894.

Dr. Chambers says, "Persons liable to this form in various degrees lose by yielding to it, more and more, their power of voluntary control, so that exhibitions of it can easily be brought on by others who assume an influence over them. They are told in a positive manner that they cannot raise their limbs, cannot open their eyes, cannot feel, and they really seem to lose temporarily, motion, sight, sensation. Mesmer turned this artificial production of disease to profit (his own) and it has been largely experimented upon of later years. But the unfortunate subjects of it have brought their masters so much 'gain by their soothsaying,' that deception has largely adulterated the real phenomena, and it is difficult to find a genuine patient. For this reason I thought it preferable to quote from a writer of unimpeachable shrewdness and honesty, and far from credulous, though destitute of the light of our modern science, than to detail the experience of our own generation."

Since that time there have been many writers who have put forward the claims of hypnotism as a panacea for all ills and have reported most marvelous cures. In the words of Christ, "Go tell John the things ye have seen, how the blind see, the lame walk, the lepers are cured, and (marvel of marvels) the poor have the gospel preached unto them."

The story of hypnotism reads like a fairy tale indeed, and according to its votaries there is no limit to its powers. All sorts of diseases have yielded to its influence, and while time forbids following this branch of the subject to great length, I will quote from Frederick Bjornstrom's "Hypnotism, its History and Present Development," the following : "That Mesmer, Puysiger and many magnetizers have cured various nervous ailments admits of no doubt. Braid also endeavored to make hypnotism a curative agency and in many cases he had a decided success. As early as 1829 Cloquet succeeded in this manner in amputating a woman's breast without pain. In 1845 Loysd, of Cherbourg, made a painless amputation of a man's leg. Broca and Follin used hypnotism in making incisions in ulcers; and other French surgeons made use of hypnotism as an anodyne in their operations. Most of them, however, found chloroform more convenient. From 1850 to 1860 hypnotism was used on a large scale by De. Esdaile, head surgeon in the hospital of Calcutta. In six years he performed six hundred operations on hypnotized Hindoos and a committee of physicians and surgeons appointed by the Indian government testified to his great success, which was chiefly derived from the fact that the most difficult operations could usually be made without a sign of pain from the patient and without memory when they awakened of what had been done to them. The Hindoos, however, are said to be very susceptible to hypnotism." Then follow some successful cases in obstetrical practice, in hysteria, epilepsy, dipsomania, and other mental diseases. In the *British Medical Journal*, February 28, '92, Milne Bramwell reports five cases cured, viz., aphemia, hyperidrosis, otorrhœa with deafness, operation for strabismus and intercostal neuralgia. He also reports some success in epilepsy, eleptiform neuralgia and chorea. After detailing each case the author states that it is his practice to suggest to the patient that he should be hypnotized by no one but himself as a safeguard against abuse. Which suggestion, by the way, points a moral, if it does not adorn the tale.

Journal of Nervous and Mental Diseases, June 1 to August, '93, J. Babinske, in an able review says, "The therapeutic effects of hypotism are almost limited to hysterical states." The natural enthusiasm which enables us all to see the expected and which verifies and certifies to the healing powers of every new medicine, has much to do with the rose-colored views presented by the apostles of hypnotism, so they seem almost to have been self-hypnotized. Cases are reported as illustrating hypnotism and as proof of its power which really belong to a different class. Cases where great fear has killed the subject are gravely given in this connection by able writers.

Bjornstrom says that hypnotism comes in contact with the law in more than one point; and has raised and answered five questions which are of grave import. I can only briefly summarize his answers. 1st. Can the hypnotized be physically or mentally injured by hypnotism? Hypnotism being a pathological state is debilitating to the nervous system, and one which can be used for good or ill at the will of the operator. The hypnotized can be injured not only by the weakening effect of the hypnosis but also by suggestions of such a kind that with or without the operator's intention they may cause injurious or even fatal results. 2d. Can the hypnotized fall victims to crime? The unconsciousness and loss of will which are so easily caused in the hypnotized, can, of course, with the greatest facility be misused for immoral and criminal purposes. Rape, murder, robbery, theft, abduction, etc., are then easy to accomplish. In the beginning of this century the people of India knew that the easiest way to steal children and carry them away was to magnetize them. Such thieves were known in India by the name of thugs and bheels, and in 1820 a band was discovered whose members had in the course of twenty years stolen millions of children. 3d. Can the hypnotized be used in the service of crime as a ready tool without a will? To this an affirmative answer is given with illustrations. 4th. Is one who acts on the suggestion of others (*i. e.* hypnotic suggestion) responsible for his actions? Those who voluntarily submit to hypnotism are in the same legal status as those who voluntarily submit themselves to the action of alcohol, opium, etc. 5th. Should hypnotism be prohibited? That legislation should seize and check the abuse of hypnotism is self-evident.

Italy, Austria and Switzerland have prohibited public exhibitions. Hypnotism should be freely allowed in the service of medical science."

Dr. H. M. Bannister, page 220, vol. III., Hare's Therapeutics, 1892 says "Hypnotism as a therapeutic agency is still in the experimental stage. It may develop into something of value, but the remarkable results reported by Voisin, Luys and others cannot be confidently expected by ordinary experimenters."

I have quoted from these authorities to make evident the main considerations in and objections to the use of hypnotism in dental practice. First of these is the time required. While this does not appear definitely from any of the authorities cited, yet I am personally informed by physicians who make use of it that to hypnotize and dehypnotize a patient requires more time on the average than ether narcosis. Secondly, the fact that only 75 to 80 per cent by the most favorable estimates, could be hypnotized. Thirdly, the difficulty of recognizing the exact amount of hypnosis required. According to Coke, cited above, the electric brush is necessary for that purpose. Fourthly, the exhaustion of nerve force on the part of the operator. In the cases which I have seen in my own office where operators in this science have hypnotized their subjects for dental operations, the evidence of nerve strain on the part of the operator was unmistakable. Fifthly, the question of the antidote of hypnosis, when the state has been induced. The reversing of "passes," calling on the patient to wake, throwing water in the face, blowing the operator's breath in patients' eyes are all suggested by different writers. But the failure of agreement here as elsewhere is noticeable. Sixthly, the dangers of "suggestion" to those whose will is in abeyance, and as noted by Chambers, the unhappy effect of weakening the patient's power of self-control which naturally follows this form of narcosis. Seventhly, the dangers from the natural popular prejudices against this form of narcosis, which would attribute any subsequent moral or mental obliquity to the effect of hypnosis and suggestion.

TEMPERAMENTS.*

BY GEO. B. PERRY, D. M. D., CHICAGO.

Mr. President and Members of the Chicago Dental Society: The intent of this paper is to give briefly, my limited experience in the study of temperaments, as seen from the point of view of a dental operator; recounting a few cases which indicate the four temperaments as they are generally classified. I do not purpose going into a deeply scientific treatise on this subject, but call your attention to some of the idiosyncrasies and peculiarities met with in our daily practice. Patients offer an opportunity for study, and merit greater time and deeper consideration than I have been able to give them, since deciding to take note of the different people one comes in contact with. An able paper was read before the World's Columbian Dental Congress by Dr. E. M. Flagg, of Ascuncion, Paraguay, entitled "The Human Temperament with

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*Read before the Chicago Dental Society, November 6, 1894.

Relation to the Human Tooth," in which he sets forth the different characteristics of the different temperaments and the distinctive features of the teeth, as found with those temperaments. Through the kindness of Dr. Ottofy I was given a copy of the paper to read, previous to its being published in the Transactions of the Congress.

"Lavater in describing Physiognomy, says, in a restricted sense it is the art of deciphering and the interpretation of the human powers; or the science which explains the signs of the inward faculties. Pathognomy in a physiognomical interpretation, is the science which treats of the passions. The first considers the character of the individual when in a state of rest; the other examines the man in a state of action. According to Ladd it is impossible to classify the temperaments with the use of methods required by strict scientific induction. The individual can judge of his own temperament only by remembering his actions and the states of consciousness connected with them. But upon such a point, memory, and even the immediate recognition of consciousness are but little trustworthy. Few things are more common than for the individual quite to misconceive and misinterpret his own mental states and tendencies. On the other hand we have no means of judging the temperament of others, except by their actions, using the word action in its broadest signification. A large part of such judgment is unavoidably misjudgment. But notwithstanding all the doubts and uncertainties which attach themselves to the subject of temperaments, those who are carefully observant of their fellows will continue to believe that important and determining natural differences exist among them. A large degree of susceptibility to sensation is naturally accompanied by feelings of attraction or dread toward the object of sensation. This fact forms a basis for the 'choleric or nervous temperament,' and finally the so-called 'phlegmatic or lymphatic temperament' depends upon the degree of mental apprehension with which different objects are seized and the consequent emotions of satisfaction or disgust. The theory is then developed that different races and peoples are distinguished by some one of these four temperaments. For example, the French are sanguine, the English melancholy or bilious, the Spanish and Italians choleric or nervous, the Germans phlegmatic or lymphatic. More generally still the Caucasian race is sanguine, the Mongolian melancholic, the Negro phlegmatic and the Malayan choleric. The choleric and phlegmatic are temperaments of action rather; while the sanguine and melancholic are temperaments of feeling. Wundt agrees with the observations of Dr. George respecting the application of the conception of temperament to orders, families and species of other animals, as well as to man. He also makes the penetrating observations that pessimism generally rests upon an individual peculiarity of temperament; and that the true art of life consists in not having one temperament but in combining them all. One should be sanguine amid the petty sufferings and joys of daily life, melancholy in the more serious hours of life's more important events, choleric toward impressions that fetter one's profounder interests, and phlegmatic in the execution of the resolves that have been reached."

In referring to the various works upon this subject I find a diversity of expression, but which in many cases leads to practically the same understanding of the result of mental impressions. Lotze's idea of the division of temperaments is as follows: "1st, the differences in kind and degree, of excitability for external impressions; 2d, the greater or less extent to which the ideas excited reproduce others; 3d, the rapidity with which the ideas vary; 4th, the strength with which feelings of pleasure and pain are associated with them; and finally the ease with which external actions associate with these inner states themselves." In the consideration of temperaments, the dentist is beset with difficulties that are hard to overcome and which seriously interfere, at times, with the determining of certain characteristics as externally expressed, thus preventing the satisfactory accumulation of data, from original investigation. There are comparatively few persons who enter a dental office with the idea of being operated upon, who are not more or less influenced by fear or dread of what is to take place, but should they come without that condition being present, it is likely to grow upon them during the operation, if it should happen to be a painful one. A sensitive condition is greatly magnified while under the touch of an instrument and idiosyncrasies are brought out which the patient does not show in a normal state. Particularly is this true of a nervous temperament, a hypersensitive caused by affliction or one convalescing from a disease wherein the mental condition has been disturbed.

In answer to the question, do we possess any index to constitutional qualities of the brain, Combe, who was President of the Scotch Phrenological Society, says: "There are four temperaments accompanied with different degrees of activity in the brain indicating to a certain extent its constitutional qualities—the lymphatic, sanguine, bilious and nervous. They are supposed to depend upon the constitution of particular systems of the body; the brain and nerves being predominantly active from constitutional causes produce the nervous temperament; the lungs, heart and blood vessels being constitutionally predominant give rise to the sanguine; the muscular and fibrous systems to the bilious, and the glands and assimilating organs to the lymphatic. The different temperaments are indicated by different signs which are open to observation. The first or lymphatic is distinguishable by a round form of the body, softness of the muscular system, repletion of the cellular tissue, fair hair and a pale, clear skin. It is accompanied by languid vital actions, with weakness and slowness in circulation. The brain, as part of the system, is also slow, languid and feeble in its action and the mental manifestations are proportionately weak. The second or sanguine constitution is indicated by well-defined forms, moderate plumpness of person, tolerable firmness of flesh, light hair inclining to chestnut in color, blue eyes and fair complexion, with ruddiness of countenance. It is marked by great activity of the blood vessels, fondness for exercise and an animated countenance. The brain partakes of the general state and is active. The bilious temperament is recognized by black hair, dark skin, moderate fullness and much firmness of flesh, with harshly expressed outline of the person. The functions partake of great energy of action which extends to the brain, and the countenance, in consequence, shows strongly marked and decided features. The nervous temperament is recognized by fine thin hair, thin skin, small thin muscles, quickness in muscular motion, paleness of countenance and often delicate health. The whole nervous system, including the brain, is predominantly active and the mental manifestations are proportionately vivacious. You are referred to a work by the distinguished phrenologist, Dr. Charles Caldwell of Lexington, which was published in 1831 under the title of "Essays on Malaria and Temperament."

I will cite only a few cases giving my personal experience with the four temperaments as usually accepted. A young man about twenty-six or eight years old, of the bilious type, came into my office one day to have a large, well-developed palatal abscess treated. The sinus caused by the burrowing pus extended from the apex of the left superior lateral about to an imaginary line drawn across the roof of the mouth from the second molar to its opposite fellow. The formation of the pus indicated long standing, covering a period of from six to eight months, possibly more, and had burrowed so deeply the depression was easily perceptible to the touch after lancing the sac. I washed it out carefully and began drilling into the palatal portion of the tooth a little at a time, it being very sensitive, owing to its diseased condition. I finally accomplished my object and had an opening at both ends, thus allowing the passage of the antiseptic through the channel. The inflammatory condition yielded readily to the treatment and after caring for it about a month, it healed nicely and I filled the root, but to be on the safe side I considered it advisable to allow the tooth to remain for some time longer before filling it and I have heard no complaint from it since. It would seem to an onlooker as if this man had little or no sensation as far as any outward display of pain was concerned, but the perspiration coming out on his face and the quiet manner in which he expressed himself was sufficient evidence to one who understood the pathological conditions, that the operations for the relief of the pus had been very painful. He simply bore it without a word or a tremor until asked about it. I did considerable work in his mouth, and he evinced the same quiet disposition through it all, thus making a model patient to work upon in every way.

As an example of a sanguine temperament I will mention the case of a Mrs. S., an explorer, traveler and lecturer. Medium height, erect, and well proportioned, quick in movement, light but sinewy in muscular development, clear, ringing voice, brownish yellow skin, hopeful, enthusiastic, aspiring ; hair rather coarse and inclined to auburn hue, large blue eyes, nose strong in outline, lips of medium fullness and firmly set, indicating decision. This lady was brought to me by the physician under whose care she had been for more than a year, being treated for the loss of nerve force, caused from overdoing and business complications. She was unable to sleep much, ate but little and reacted slowly from the tonics given her. The thought of a dental chair haunted her like a nightmare, but she felt the necessity of having the work done, her mouth being in such a condition that it interfered seriously with her return to health and had a detrimental effect upon the medical treatment. After much persuasion she was influenced by the physician to commence the work and in this highly nervous state she came to me. It was difficult at first to work upon her, but I gradually dispelled the fear until she would come in with a happy expression and a fuller appreciation of what was being done for her. She went to Europe, had her time fully occupied, returned after three or four months and came in to have the work completed, which time would not allow previous to her departure. She is now very much interested in all that is being done, and asks very intelligent questions concerning it, showing how much her interest has increased and the impatience which she at first exhibited having passed away entirely, being replaced by a desire to take sufficient time to have it done properly.

A case of sanguo-nervous temperament came to my notice quite recently; a Miss D., about twenty-two or three years of age, medium heighth, good figure, carriage erect, brick red hair, gray eyes that had snap to them, ruddy lips and complexion. She never had any dental work done but exhibited no sign of fear. At the first sitting I put a gold filling in a sensitive central and extracted five roots without even a local anæsthetic being used. There was not a murmur or visible sign of pain, which rather surprised me as I had looked for a fidgety patient from her appearance. At the next sitting I filled the proximate cavity and extracted three roots without any manifestation of its being unbearable.

I have just completed what work I could do in the mouth of a man who was decidedly of the nervous type, about fifty to fifty-five years of age, sallow complexion, small, gray, restless eyes, dark hair plentifully streaked with gray, medium height and build, very impulsive in manner and quick in movement. Erect and well proportioned, voice clear but a little inclined to be sharp, oval facial contour, and aquiline nose. Mr. H. had a left superior second bicuspid which had been devitalized, the roots filled and what remained of the crown was built up with cement. In talking over its conditions an artificial crown was decided upon, so I marked it preparatory to excision and placed the forceps upon it. When I closed them, the broken-down crown, with its cement backing, flew into several pieces and he almost as quickly flew into the reception room. I stepped outside and asked what was wrong, and he answered "You have broken it into pieces, root and all." I induced him to be seated in the chair and with the mirror showed him how nicely it had followed the line of marking, leaving the root intact, whereupon he quieted down and I finished the operation. He would come in with the idea of staying just so long, but seldom left when he expected to, for he soon became interested in having as much accomplished as was feasible and seemed to bear up under it better than he anticipated. The remaining temperament which I have not illustrated with a case in actual practice, is the lymphatic, and well represented by a Mr. K., a medical student, whose mouth required a great deal of work, to put it in order. He is tall, rather slight in build, walks erect, brownish yellow complexion, sluggish circulation, soft muscles, pleasing voice but very deliberate in expression and movement. Calm, cool, quiet disposition, but filled with ambition and a persistent worker. Very fond of books and study, caring little for society. Slow to make acquaintance, but true to his friends and not easily influenced, rounding and full forehead, large brown eyes, having a penetrating gaze, prominent nose, lips thin and firmly set, denoting determination of purpose. Among other conditions in his mouth I found an exposed pulp and proceeded to devitalize it. There was considerable pain before this was accomplished, both during his presence in and absence from the office, but he sat firmly through it all while being operated upon and was certainly a patient easy to work for. He seemed to understand how much more could be done for him in the same length of time, if he did not move about.

It is unnecessary to continue the citation of cases, as it would be largely a repetition of many points, although I have others which I have observed and am observing at present. With your permission I will give one more which was rather interesting to me and may present some novel ideas to you. It is that of a Mrs. E., a teacher of Christ science, who came to see me about four months ago concerning a troublesome tooth, which upon examination proved to be the left inferior second molar. It had become lame from lack of care and attention, and being elongated in the socket was very sore. The crown was completely gone on top and the carious condition had extended down into the pulp chamber, destroying the pulp, the result being the formation of gas at the apices and consequent swelling. She said: "Doctor, I do not know why I came to you for treatment, as I have been able to care for myself as well as others, since entering upon the study of this science, but my time has been so taken up for some months past with cases beyond the aid of the physicians and considered hopeless, that this tooth has gotten beyond me" (she did not state where the limit was) "and I thought perhaps you might assist me." I treated the surrounding tissue to reduce the inflammation four times, and was succeeding in the result when she said: "My tooth will not ache any more or give me further trouble," thus implying that *she* had it under control and apparently ready to assume that what she had done to it gave the best result. I strongly advised her to have it filled for the sake of sanitation if for no other reason, but she assured me she could fill her own teeth and had done so to three of them. Upon asking to see one of them, she placed her finger on the left upper second molar, and I found upon looking at it that the fissures were filled not with tooth substance but salivary calculus, underneath which I detected the presence of caries. When I examined the lower tooth I took my pliers and a pledget of cotton to dry out the cavity; as I did so I pressed down a little and she immediately winced, with an "Oh!" Her husband who was standing close by said: "It does not hurt you, there is no pain; it is simply sore and uncomfortable." She answered quickly: "Oh, no, there is no pain, it is just a little sore." I believe it to be a case of fortitude, trying to conceal the pain by not making any movement, in accordance with the theory that it is thoroughly under their control. I called her attention to the left upper central that was badly discolored, and suggested that a crown would greatly improve the front of the mouth and be less conspicuous. She thought that might be so but said she had *whitened* the tooth considerably by mental treatment during the last six months, so much so that her friends had remarked upon its changed appearance for the better.

It is hardly necessary for me to give the physical characteristics of the patient, as her case is a unique one, and therefore not easy to classify under any of the divisions mentioned. Her husband stated to me that it was their belief that the body contained as much of the constructive elements now as at any time, and gave me to understand that nature could and would replace, or reproduce lost members *ad libitum*, thus quieting any fear we may have of becoming an *edentulous* race. I offer this case to you for what you may consider it to be worth without further criticism on my part; suffice it to say the theories advanced are radical ones and differ materially from those generally accepted by the profession to-day. If we could accomplish such results as growing teeth where they were needed, bleaching them when we wished, filling the cavities when they existed, or preventing them from appearing; handling cases of obscure neuralgia and other forms of pain with perfect success and no inconvenience whatever to the patient, through mental treatment alone, our goal would be reached and our profession have little to aspire to or stimulate them to further research. I regret that lack of time and experience has interfered with my going into this subject still further before reading this paper, but I hope to overcome these limitations in a degree in continuing the investigation. I believe it possesses much of interest and instruction to those who care to take it up, and I shall be pleased if I have given you something, differing from your own experiences in the interpretation of temperaments.

PROCEEDINGS OF SOCIETIES.

MINNESOTA STATE DENTAL SOCIETY.

(CONTINUED FROM PAGE 821, NOVEMBER REVIEW.)

A REVIEW OF NEW REMEDIES.

BY O. A. WEISS, D. M. D.

POTASSIUM PERMANGANATE.

Potassium permanganate as an antidote for opium poisoning, was only within the past year brought before the medical profession by Dr. Moore, of New York, yet in this short period its value has been repeatedly attested, so that now probably very little of a doubt exists as to its positive value. Time will not permit detailing cases of poisoning in which it has been successfully used. An interesting report of several cases of poisoning with detailed description of treatment pursued in each case, is given in the *Medical News* of May 12, 1894. Some of the cases there reported, have after several hours ingestion of the opium been successfully treated.

The general plan of treatment is as follows: first, evacuate the stomach by means of the stomach pump or stomach tube; emetics are rarely of value, owing to paralysis of the stomach. Then introduce into the stomach six grains of potassium permanganate in six ounces of water, allowing this to remain for a few minutes, then again evacuate the stomach and introduce a fresh solution of potassium permanganate. At the same time give five or six hypodermic injections of potassium permanganate, of one grain to the ounce. Further treatment consists of respiratory stimulation, hypodermic injections of strychnine to the amount of one-tenth grain, atropin to the amount of one-twentieth grain and caffein six grains, also artificial respiration, hot foot bath, followed by cold douche, face and chest dashed alternately with hot and cold water.

PYROZONE.

A solution of H_2O_2 under the name of pyrozone has been introduced to the profession as far superior to any similar preparation. There are three solutions of different strengths, one a 3 per cent of H_2O_2 in water, the other two have 5 per cent and 25 per cent of H_2O_2 in ether.

It has been claimed that the 3 per cent aqueous solution of H_2O_2, or pyrozone, is the only stable preparation on the market, that it contains a definite amount of H_2O_2 which is always constant in quantity, that it does not deteriorate with age and contains only the slightest trace of acidity which cannot be detected with litmus paper. Not all who have used the aqueous solution of pyrozone can substantiate the claims set forth. It has been found that its active power has become diminished by age even when carefully corked. Only a few days since the writer found that an original bottle of pyrozone kept at home in a cool dark place, had exploded from the pressure caused by the decomposition of the solution.

The ethereal solutions of pyrozone, both of which are caustic, have been found to be of value, particularly in bleaching teeth and in pyorrhœa alveolaris.

While both of these solutions are caustic, yet their caustic action is not so deep as that of carbolic acid and some other caustics. The parts may be much whitened from the use of the ethereal solutions, but they soon resume their normal appearance without any apparent injury.

SODIUM PEROXIDE, NA_2O_2.

Sodium peroxide the analogue of hydrogen peroxide, was introduced to the dental profession by Dr. E. C. Kirk in 1893. It possesses properties similar to those of hydrogen peroxide and is in addition a saponifier. Dr. Kirk spoke of it more particularly in connection with bleaching teeth, but since then, in the hands of some it is taking the place of hydrogen peroxide. It is claimed to be fully as powerful an antiseptic as hydrogen peroxide, and its saponifying properties are considered an additional advantage especially in the treatment of teeth with devitalized pulps, in which the contents of the canals are not only sterilized but at the same time saponified, made soluble, whereby they may be washed out ; in this way more perfectly cleansing the canals. It is also claimed that a solution of sodium peroxide properly made is more stable than solutions of hydrogen peroxide. It is further claimed to have a greater amount of available oxygen, having 20.51 per cent, while hydrogen peroxide has only about 1.5 per cent.

It is obtained in the form of a white solid, strongly alkaline and caustic. To make the solution it must be kept surrounded with ice and added little by little during a period of several hours. It has been found that a proper solution will *not* result unless it is carefully and slowly made, but when once properly made it is very effectual and stable. Several failures have been noted simply because the solution was not properly made.

KALIUM AND NATRIUM.

Kalium and natrium for treating teeth with devitalized pulps, was introduced by Dr. Emil Schreier, of Vienna, Austria, about two years ago. This method, like any other new method in the practice of dentistry as well as in medicine, has not yet been long enough before the profession to be universally adopted, though it has been used by several operators and as yet no unfavorable reports have been made. According to reports from those who have used this method it would seem that the cleansing of all root canals had been resolved into a very simple and easily accomplished operation. It is a method that is certainly worthy of every one's trial, and that is the best way to prove the merits or demerits of anything ; of course, in trying any new method or remedy it is necessary to carry out the instructions in its use in every little detail unless you know positively that you can improve them.

Dr. Schreier uses two parts of the metal sodium to one part of potassium. Then by dipping a nerve broach into it, a sufficient amount adheres ; the broach is then carried into the canals, decomposition takes place at once, the contents of the canals are saponified, and to some extent are expelled from the canals. The canals are then simply washed with warm water and dried, when they are ready for filling. Care must be taken not to use too much of the sodium and potassium, for, when brought in contact with water the decomposition is so violent as to be explosive.

SULPHURIC ACID.

Dr. J. R. Callahan in a paper before the Ohio State Dental Society, introduced sulphuric acid in 25 to 50 per cent solution, for gaining entrance to small and difficult canals; also for discovering canals that cannot be found in the ordinary way. The use of H_2SO_4 of the strength stated seems like an unsafe and even dangerous proceeding, but Dr. Callahan brought before the society several teeth that had had H_2SO_4 of the strength stated (50 per cent) sealed in them from a few hours up to four days to illustrate the action of the acid. There was found to be no perceptible difference in the amount of decalcification caused by the acid, in those teeth having been treated with the acid for a few hours and those having been treated for four days. The claim was made that the action of the acid is self-limiting in that the decalcified layer of dentine forms a barrier of calcium sulphate which is insoluble. Dr. Callahan has used this method for those difficult canals for four years and has had no bad results. The writer has tried this method in a few cases and the results have been entirely satisfactory.

To find canals that cannot readily be found in the ordinary way, seal the acid on a pellet of cotton into the cavity for twenty-four hours, then remove and the cavity will have a bleached appearance and the small canals present small dark spots. These may then be probed and a little acid worked up into the canal on a small broach, then with a broach or small reamer you will be able to enlarge the canals. Further experiment (George Pollock, Surgeon to St. George's Hospital, O. D. J., January '94) has shown that 25 per cent solution H_2SO_4 has no action upon healthy bone but acts only on diseased bone.

This method is certainly very effectual in opening small canals and at the same time a good sterilizer. Care must be taken in using steel instruments in the presence of the acid because of its corrosive action. The probes should be of gold or platinum, or an old iridio-platinum nerve broach for carrying the acid up into the canal. Then, too, a bottle of sodium bicarbonate should be kept with which to wash the canals after the acid has been applied; this will neutralize the acid and terminate its action.

SALOL.

Salol as a root canal filling and pulp capping, was introduced by Dr. A. E. Mascort, of Paris, (published in *Cosmos*, May, 1894). Salol is a compound of salicylic acid and phenol, containing about 40 per cent of the latter. It is a white crystalline substance, somewhat resembling fine common salt. It is insoluble in water and glycerine, but readily soluble in alcohol, chloroform, ether, fixed and volatile oils. It is antiseptic, nonirritant and nonescharotic. It fuses and becomes a liquid at about 105° F., and recrystallizes again below that temperature, forming a hard crystalline mass.

Dr. Mascort has used salol for root filling for four years with the greatest satisfaction. It possesses some points of merit, being antiseptic, nonirritant and nonescharotic, and insoluble in water, thus practically indestructible as a root canal filling, easily changed into a liquid which again changes back into a hard nonshrinking mass. Then, if for any reason it should become necessary to remove a canal filling it is most readily accomplished by simply inserting a heated root canal drier and then with little twists of cotton or bibulous paper absorb the liquid filling.

It also makes an excellent pulp capping, being nonirritant and nonescharotic and so easily applied without any pressure, yet brought in perfect contact with the exposed pulp. It may be mixed with iodoform, aristol, or oxide of zinc if one wishes the action of any of these.

As a root filling, it is used by melting it and then with a warm hypodermic syringe having a fine needle, insert the needle as far as possible and inject the salol, then slowly withdraw the needle and at the same time keep injecting the salol, capillary force will hold the liquid salol in position till crystallization takes place. In fusing the salol no more heat should be used than just sufficient to melt it, else recrystallization will be delayed.

COCAINE.

Much has been said pro and con about cocaine for local anæsthesia, some failing to find language that is too expressive in their denunciation of this drug, others again are equally ostentatious in their commendations. That cocaine is a dangerous drug there is no doubt, neither is there any doubt as to the danger of chloroform, arsenic, strychnine and a score of other drugs in our materia medica, but the question of danger of these latter drugs does not so far militate against them as to exclude them from daily use or to banish them from our materia medica.

All of our so-called dangerous drugs are used more or less constantly, and when intelligently used are comparatively speaking safe.

The intelligent prescriber of medicines is slow to prescribe a maximum dose of any so-called dangerous drug in his first prescription for a new patient. He is always on the alert for idiosyncrasies, and in the language of a professor of materia medica, "feel your way," *i. e.* begin with the minimum dose. The use of cocaine is no exception to this. If cocaine is such a dangerous drug that it should be banished from our materia medica, it seems to me that our enlightenment and progression is for a moment cast in the shade as compared with the natives of South America, who have for ages used cocaine in its original state, in the leaves of the coca erythroxylon. Cocaine is a comparatively new drug in medicine, having been introduced about ten years ago. It is used chiefly for its anæsthetic properties and as a local anæsthetic it ranks first place. In the practice of dentistry there is frequent and sometimes *great* need of local anæsthesia. Now do not imagine that a great, glaring sign of *Painless Dentistry* or *Teeth Extracted Without Pain* or something of that kind is to be painted here as *some* members of some dental societies in this land have done when the question of local anæsthesia was being considered. Every rational practitioner of dentistry will admit that there is frequently great need of local anæsthesia. Cocaine, while being the best local anæsthetic at our disposal, does not meet all requirements. It is not an obtundent (in medicinal doses) of all sensation and for sensitive dentine it is almost worthless. It is in the soft tissues that its anæsthetic properties are available, and by the dentist may be used in such operations as extracting teeth, preparing roots for crowns, extracting pulps, and many other operations, such as opening into the antrum, treating caries and necrosis, implanting teeth, etc., in which usually very satisfactory results may be obtained.

The Preparation Used. This undoubtedly is the most vital point of consideration in the use of cocaine. Much has been said and done to make a safe and effectual preparation, some having produced preparations which very much resemble the so-called "shotgun prescription," containing from six to eight ingredients, of which several belong to the group of so-called dangerous drugs. It is questionable whether it is desirable to use a complex preparation. The various adjuvants and correctives used by some, are called for only in those cases where symptoms of intoxication are present—in idiosyncrasies—and in order to combat these toxic symptoms the correctives must be used in medicinal doses. Now it is well known that certain drugs produce different actions in different persons, and in the use of a complex preparation in which several drugs that may be called dangerous are used in medicinal doses, unpleasant symptoms might arise from any one of them. Then again complex preparations might undergo changes that would seriously alter the intended action of the preparation.

In compounding drugs the question of compatibility should be very carefully studied, a matter that has been overlooked in some of the complex preparations of cocaine.

According to Schell, in the *Pharmaceutical Journal and Transactions*, p. 758, the salts of mercury and cocaine are incompatible. It is also claimed by Dr. E. Spencer, in *Medical World*, May, '92, that cocaine and menthol are incompatible. Atropine has been much used as a corrective in cocaine preparations, but its value for the purpose intended is questionable ; instead of being an antagonist to cocaine, it is claimed by J. A. Wessinger, in *The N. Y. Medical Journal*, and others in Experimental Therapeutics of the Annu. Univ. Med. Sc's of '92, to be a synergist to cocaine.

Upon looking over all the literature at my disposal, I find that those who have used cocaine a great deal use simple solutions. Paul Reclus, of Paris, who has used cocaine in over 1,200 operations in various branches of surgery without an accident, uses a simple solution of cocaine with an antiseptic in it only. Panas and Magitot are followers of Reclus. Dr. Bleichsteiner, of Graz, Austria, has made over 15,000 injections of cocaine, using simple solution with an antiseptic ($HgCl_2$). The writer has used cocaine in simple solution for nearly two years in the extraction of teeth in more than 100 different persons with the most satisfactory results, having extracted as many as six teeth at one sitting.

It is not necessary, neither is it desirable, to use a solution of more than 4 per cent of cocaine with 1-2 per cent of carbolic acid. This makes a very effectual and stable solution. Even a 2 or 3 per cent solution of cocaine is extensively and satisfactorily used by some. During the writer's experience there has never been a case of alarming symptoms in using a 4 per cent solution, neither has there been any sloughing.

Many who have used cocaine and have observed toxic actions noted them when using a stronger solution, and as they diluted their solutions to from 2 to 4 per cent their toxic symptoms disappeared. The writer has not been able to find the report of a fatality from the use of not to exceed a 4 per cent solution of cocaine. But when a fluid ounce of a 10 per cent (R. Troquart, An. Un. Med. Sci. V. 5, '92,) solution is injected as has been done by some of our medical brothers we may occasionally look for alarming intoxication.

It has been found that the concentration of the solution has much to do with the production of intoxication—one grain of cocaine in a 10 per cent solution might produce alarming symptoms, but the same amount in a 2 per cent solution is attended with no symptoms at all. (Paul Reclus). It has also been found that a tolerance can be established for cocaine. A case is reported by Dr. Ball in *The Journal de Medicine de Paris*, Feb. 15, 1892, where a man used 15½ grains of cocaine daily and nearly as much morphine.

The proper method of using the solution is by injection with a hypodermic syringe. In the extraction of teeth the injections should be made into the gum around the tooth and into peridental membrane, making about four punctures. Simply applying it on the gums is ineffectual. To secure the greatest uniform success, certain little details in the use and care of the syringe must be strictly observed. The needle should have a short bevel point, not more than half that usually found on new needles, and should be kept as sharp as possible. By having a *sharp* point with a short bevel there will be less pain and less liability in breaking off the long attenuation found on new needles, and leave it sticking in the alveolar process to irritate and probably produce sloughing.

And then last, but most important of all, keep your syringe clean and the point properly sterilized. Too much stress cannot be laid upon the cleanliness of the syringe, and results entirely satisfactory need not be expected in the use of cocaine with an improperly kept syringe.

Before making an injection secure the entire confidence of your patient ; do not promise them that there will be absolutely no pain at all, but assure them that there will be but little if any pain and that often there is no pain at all. All fear and timidity upon the patient's part must be dispelled in order to secure the most happy results. Much depends also upon the operator's demeanor; he should be calm, self-possessed and sympathetic.

Make your first injections around *one* tooth only, if there are more to extract, injecting about one drop in each puncture and note the action. Idiosyncrasies are readily manifested, but symptoms of syncope are not necessarily due to the cocaine, these symptoms often being present in various degrees as a result of emotional causes when no anæsthetics at all are used. The so-called " nervous" (in reality nerveless) persons are quite likely to present symptoms of syncope, which may be no more than simply pallor and a feeling of weakness. In such cases the results will be more satisfactory if some stimulant be used, alcoholic, caffein or often a few inhalations of ammonia will be sufficient to enable you to proceed without more serious affection.

Care should always be exercised in making injections on the lingual sides of the third molars, for in the inferior maxilla it would not require much carelessness to penetrate the inferior dental vessels and nerve and in the superior maxilla the posterior palatine vessels and nerve are to be avoided. The almost inaccessible position of these teeth in some cases and the important vessels and nerves in close proximity on their lingual side renders it extremely difficult to make proper injections around them, and therefore care should be exercised not to penetrate those important structures.

Upon Whom to Use Cocaine. In extracting for small children very often they will not tolerate the pain of inserting the needle of the syringe and in all such cases it will prove more expedient to resort to other methods. In old and feeble persons with cardiac weakness it should be used with great caution. All persons with serious cardiac lesions are unfavorable subjects for the use of cocaine. It should also be used with care in persons suffering with chronic respiratory affections and in highly neurotic persons.

Antidotes, Restoratives and Resuscitants.

No reliable antidote for cocaine intoxication is known. Various drugs have been used with success. As the symptoms of intoxication are variable, the antidotes should meet the conditions present in each individual case. Where there is much exhilaration narcotics are indicated, and chloral in large doses (gr. 20-30) has been successfully used (Dr. Cushney, A. M., M. D., Ann Arbor, Mich., and Andrew Fullerton, *London Lancet*, September, '92). Where there is cardiac weakness, tr. digitalis in twenty min. doses by hypodermic injection. This may be repeated in twenty minutes, or inhalations of amyl nitrite which is also a respiratory stimulant.

DISCUSSION OPENED BY DR. M. B. WOOD, MANKATO.

Dr. Wood: Regarding Dr. Schreier's preparation one point made by Dr. Schreier was that better results were secured in the use of kalium natrium if the root was not dried before applying. Using the preparation in the moist root gave better results because of the greater opportunity for saponifying. I have not had much experience in the use of this preparation, but had one or two operations with it in my own mouth which were unsatisfactory. The heat generated, excited inflammation and the temporary stopping had to be taken out.

The subject of pyrozone was pretty well discussed in the Minneapolis meetings last winter, and some points were brought out that were not mentioned by Dr. Weiss. I think the 3 per cent solution was just placed upon the market at that time. I have not received the satisfaction from it that I have from the other solutions, either the five or twenty-five. I have used both and experienced good results, though I cannot say how permanent they will be. I do not think the remedy has been with us long enough for us to speak with certainty as to permanent results.

As for sodium peroxide, Dr. Kirk states that a great deal of care should be used in handling this drug. It must be kept closely bottled, as it will gain 20 per cent in weight in twenty-four hours if not bottled with ground glass stopper.

One of the drawbacks appears to be in the preparation of the solution. If the drug is added too rapidly to the water the result is practically oxide of soda which has not a particle of effect as a bleacher or sterilizer. Dr. Kirk advises using a 50 per cent solution and neutralizing with a dilute acid, preferably hydrochloric ; the chemical compound will be common salt (which we all know is harmless and easily washed out). When dilute sulphuric acid is added the result will be glauber salts.

Dr. Van Woert uses the saturated solution, saturating cotton, packing the roots, and sealing it in two days. In that connection, Dr. St. John last winter reported unfavorable experience in the use of pyrozone in the same way, stating that it was unfavorable in its effects upon the dentine in teeth below the average quality in structure.

Dr. Van Woert prepares his solution by taking a tumbler half full of distilled water placed in a dish of cold water, and adds sodium peroxide in small quantities, dusting it in slowly, to cause as little agitation as possible. The peroxide should be finely powdered. Used as it comes in the can, too much is added at a time, which results in a color resembling iodine on the surface of the water, an indication that the solution is valueless. Action of gas is not so vigorous as with peroxide of hydrogen.

There are one or two late remedies Dr. Weiss did not mention. One mentioned by Dr. Bogue was a proprietary medicine in France, *Venaigre de Pennes*, a preparation composed of benzoic acid, boracid acid, benzoin, carbolic acid and various other drugs. Its antiseptic qualities are such that Dr. Bogue says "About four months ago I threw a few drops upon a piece of beefsteak that was not very fresh and another piece that was fresh, and I have kept them in my office ever since.'' Its use has been advocated after the application of arsenic and without extracting the pulp in third molars, especially where there is pain from exposure or partial exposure. The cavities are then filled and it is claimed the patient never afterward complains.

One of the more recent remedies is trichloracetic acid, prepared from chloral hydrate and nitric acid. All the chloracetic acids are powerful caustics. (U. S. D.) It may be used to dissolve such deposits from roots as cannot be reached with instruments in pyorrhœa.

Dr. Dunn recommends for hypersensitiveness at necks of teeth, a ten per cent solution. When pain continues, it shows acid reaction of the mouth, and an alkaline solution must be applied to neutralize. He also recommends it for canker sore mouth.

Alumnol is a whitish powder (not hygroscopic). It has been used locally as a powerful astringent and antiseptic. Although it coagulates albumen, it is said to be dissolved in an excess of albumen and therefore to be able to reach deep recesses of wounds. Strength of the solution varies. It is probably an aluminum naphtholsulphonate. (U. S. D.)

Phytolacca acinosa has long been used in Japan as a diuretic and is said to be violently poisonous. It is a spinal convulsant and at the same time stimulant to the circulation.

Phytolacca decandra (poke root), emetic, purgative and somewhat narcotic. (U. S. P.)

Dr. KNIGHT: I have had quite a number of occasions in the last few months to use trichloracetic acid in cases of pyorrhœa and can report good results. One or two cases had baffled skillful men and the patient had suffered a great deal. The 20 per cent solution gave much relief. I do not say it cured. I desire also to mention its use in the treatment of abscesses. I had a case two or three weeks since of a lower first bicuspid abscessed, with a fistulous opening. I washed the tooth out with 3 per cent pyrozone, following with 20 per cent solution of the acid, injecting the pocket full through the root canal by the aid of a rubber cone upon my hypodermic needle. One treatment was sufficient to effect a cure. I sealed it up and left it two weeks and the result was a permanent cure.

Dr. GOODRICH: I have used it successfully the past few months.

Dr. WOOD: I would not suppose a full strength—a saturated solution would be used, in removing those deposits from the roots, for fear of pain.

Dr. WEEKS: A 10 per cent solution in most cases will cause pain and a stronger solution will cause more pain.

Dr. KNIGHT: That is not my experience. I have not found that to be the case when I have used even 20 per cent solution.

Dr. BAILEY: I have used tinct. of myrrh. However I do not get good results unless I use it undiluted, and thus used it is rather heroic treatment. I use it as a gargle for the gums; half a teaspoonful is taken into the mouth and held there; the myrrh is precipitated about the necks of the teeth and in cases where it can be employed is quite efficacious in reducing a general tenderness and soreness of the soft tissues. In the pockets I still use the remedy introduced long ago—by Prof. Atkinson, I believe—a saturated solution of iodine in creosote, and get as good results, many times, as with any of the newer remedies. I carry my remedy to the bottom of the pocket by those small Japanese toothpicks which I shape with my knife for each case. I think I get my greatest comfort in using this remedy in those cases where there is pain and sensitiveness in the pocket. In such cases I have often found one or two applications to entirely remove the sensitiveness.

I had an experience that I would like to relate, in bleaching a tooth by using pyrozone and warm air.

One of my patients had a right superior central incisor which was nearly of a seal brown color. The other teeth being unusually clear made this one painfully conspicuous. On its mesial surface was a large gold filling placed there before she became my patient. At the time it was filled it was also bleached but the unsightly color returned.

In my attempt to bleach it I first isolated it by the rubber dam; then I sprayed the ethereal solution of pyrozone, using the atomizer furnished by McKesson & Robbins. I used both the 5 per cent and the 25 per cent solutions but think I got as good results with one as the other. After wetting thoroughly with the spray I dried with a warm air syringe. I took two settings of about two hours each, and the unsightly color practically disappeared and had not returned three months afterward. I did not remove the filling but sprayed directly upon the enamel. I do not know whether such a practice would succeed again, nor why it succeeded this time. I made note of it that others, who may have a tooth unsightly in color and the dentine of which cannot be reached, may make an effort to improve it.

Dr. WEISS: Speaking of Dr. Schreier's preparation being used in root canals after drying them, you need not expect very satisfactory results. It is supposed to be used in canals containing putrescent pulps, in which case the moisture present causes immediate decomposition of the preparation. Moisture—water—is necessary for the action of the preparation and then decomposition takes place immediately. There is a great deal of effervescence whereby much of the contents of the canals is expelled.

Speaking of sodium peroxide it is necessary to keep it closely corked only when the salt is in its original form.

Dr. Van Woert has experimented a great deal with it and he does not take any particular pains to keep it corked after it is dissolved in water. It is true the drug is a powerful caustic but the tooth being treated is usually isolated from the rest so that no injury need result to the soft tissues from its caustic action. It is not a new drug. It has long been used in the arts for bleaching various materials, especially fabrics, and it was in this way that Dr. Kirk was led to think of using it in bleaching teeth. Since then it has been found to be of value in the treatment of teeth having putrescent pulps.

Trichloracetic acid is a powerful caustic and a painful one, too. It seems to me its use would be painful in removing deposits (salivary or serumal) from the teeth; but, another use for it is in the removal of green stain. It may be used in the same way that some use iodine, *i. e.*, applying a little with a stick and not allowing it to come in contact with the gums, then polish with pulverized pumice. It is very effectual for this purpose. I have used a saturated solution which can be made by filling the original bottle full of water.

ELECTRO-THERAPEUTICS.

BY M. G. JENISON, M. D., D. D. S., MINNEAPOLIS.

In consenting to prepare a brief paper on dental electro-therapeutics I find myself in comparatively an unknown field, so shall attempt to consider the subject in its broader sense, in the hope that the brief outlines given and the quotations made will result in a few theories and conclusions which may be of use to us in our specialty.

One great defect of those who practice electro-therapeutics is ignorance of the physical relations of electricity, and from this source arise at least half the blunders and discouragements that so many who attempt this branch often experience.

It has been observed that electrization, besides being a local stimulant, also exercises an influence over general and local nutrition that entitles it to a high rank among constitutional tonics. In electricity we have an unsurpassed means of improving the general nutrition in a large variety of chronic morbid conditions.

Scientific electro-therapeutics require scientific diagnosis. He who only knows how to apply electricity, is not fit to do even that. For some reasons electro-therapeutics is the most exacting and laborious of all the special departments, for in a certain sense it trenches on, and necessitates a knowledge of all other departments.

Compared with the internal remedies, electricity has the great disadvantage that on account of the necessary mechanical and technical difficulties in the way of successful employment it cannot be rapidly popularized.

Drugs for internal administration can be spread over the earth in less time than is required to master the elements of electro-therapeutics. Could electricity be given in the form of pills or powders as successfully as it is now employed, its use would increase a thousand fold. One of the greatest drawbacks thus far, has been the lack of thorough special education, so let us consider some of the requirements, under the head of electro-physics.

Consider first the nature of electricity and magnetism, the polarity of magnets: Magnetic induction, magnetic poles, physical effects of magnetism, frictional or statical electricity, action of the Leyden jar, chemistry of the battery, polarity of electricity, polarization of electrodes, galvanometers, laws of electrolysis, induced electricity, induction coils, magneto-electricity, thermo-electricity, thermo-electric batteries, Ohm's law and its practical application, tention or potential, resistance, quantity or strength of currents, etc.

Under electro-physiology you must consider the action of electricity on the skin, on the brain, and spinal cord, on the sympathetic, pneumogastric, and nerves of special sense, and on the motor and sensory nerves and voluntary muscles. Also its action on involuntary muscles, electro-conductivity of the human body, and effect of electricity on nutrition and the relation of electricity to life.

Under electro-therapeutics we have the general therapeutical action of electricity, the stage of disease when indicated, differential action of poles and current direction, care and details of application, and how to judge of effects.

General and local electrization. The study of various diseases that may be benefited by its use, under which come nearly all nervous disorders and diseases of the skin, of organs of digestion, diseases of the larynx, diseases of the eye and ear as well as miscellaneous physical disorders.

Under electro-surgery we have the use of the galvano-cautery, treatment of benign and malignant tumors, aneurisms, varicose veins, strictures, ulcers, fistulas, sinuses, and a long list of miscellaneous surgical diseases.

Another important application of electricity is that known as cataphoresis or electrical osmosis, by which we designate the introduction of medicaments by means of electricity, into the body through the skin or mucous membranes. This action of the current can be easily demonstrated. In experiments on animals, strychnine poisoning has been produced by the application of the anode moistened in the solution of strychnine.

In practice, quinine and potassium iodide have been thus introduced and subsequently detected in the urine. In the application of iodine to the inflamed ovaries the presence of the drug has afterward been detected in the saliva. Efforts have been made in this line to produce local anæsthesia with quite satisfactory results.

One of the first writers on this subject was Dr. Richardson, who wrote two articles on "Voltaic Narcotism," in 1859. Among other experiments he reports the extraction of five teeth where he had produced complete anæsthesia in ten minutes by an application of chloroform and aconite. Dr. J. M. Corning reports some successful experiments with cocaine in 1886. For the treatment of neuralgic affections this method has met with favorable results.

Among numerous cases reported by Dr. Peterson, is one of double trigeminal neuralgia of a year's standing. Relief was afforded for several hours by cataphoric use of cocaine and aconite. A case of inferior maxillary neuralgia is reported by Dr. Booth, who employed a 10 per cent solution of cocaine.

One of the advantages claimed for this method of treatment for neuralgic and superficial pains and cutaneous operations, is that it gives relief without producing constitutional effects and is therefore superior to any narcotic given internally.

With this brief and imperfect outline, which is all our time will admit of, let us consider a few of the applications which would certainly be worth a thorough trial by the dentist, though it must be in a large degree in the nature of a theory or experiment, for as far as I can discover little or nothing has been reported in dental practice.

We have already mentioned the relief of certain neuralgic conditions. In the acute and chronic inflammations so frequently met with, relief could be afforded. We should not attempt this treatment where suppuration is well established, as in that case we would be liable to drive the pus into the system. By cataphoresis we could obtain a much deeper and more characteristic effect of our medicaments. In hypertrophy of the gums permanent cures may be effected. If desired the live pulp can be removed almost painlessly by an application of cocaine with the positive current. In the treatment of root canals preparatory to filling we have a very complete germicide in the heat applied by means of an electric broach.

It is sometimes our misfortune to meet with very obstinate cases of hæmorrhage, and where all other remedies fail, you can rely with absolute certainty on securing relief with the positive pole of electricity, carrying the application to the point of coagulation but not cautery.

With these possibilities open before us, it is well worth our while to at least investigate them thoroughly.

DISCUSSION OPENED BY DR. SUDDUTH.

The substance of the paper was the practical application of electricity to dentistry on the line of medicinal application by therapeutics—not so much the application of electricity itself, but its use as a means of introducing other topical remedies by absorption, whereby a less quantity need be used. I know personally that this method of medication has been used a considerable length of time, and has been more or less successful. I have not used it in connection with the current but do not see why we could not get just as good results with it as with other remedies—anything that will lessen the quantity of the drug and increase its efficiency is surely a means to be used. That is the main point I draw from the paper. I think the conclusions are sound and if we used electricity more in such connection we would be exceedingly pleased with the results.

Dr. Jenison: We should not lose sight of the electricity itself, outside of the medicines. It will confer benefit in the restoration of normal conditions.

Filling Root Canals.

By I. C. St. John, D. D. S., Minneapolis.

A fair percentage of the articles which have appeared in the dental journals within the past year have been on root canal preparation and filling. Personally I am heartily in sympathy with the operators who endeavor to save pulps and I wish to be considered as belonging to their number, although it is a hopeless minority. All of us, however, are repeatedly called upon to prepare and fill root canals.

Let us then consider if there is any call for improvement in our favorite methods or if it may not be well to adopt new ones.

On the afternoon of October 18, 1893, the Minneapolis Dental Society held a clinic at which a majority of its members were present and took part.

Canals in molars and bicuspids, which were mounted in plaster and the apices of the roots enveloped in yellow wax, were cleaned, prepared and filled. Finally each filled root was removed from its investment and filed until the canal was exposed throughout its entire length and the condition of the filling noted. At the evening meeting Dr. Weeks, in making his report of the clinic, let the clinicians down easily by stating that not over 25 per cent of the canals were found to be perfectly filled. It was very noticeable that the only ones present at that meeting who were enjoying the happy belief that they could perfectly fill difficult canals were those who were not at the clinic. The materials used were chloropercha, gutta-percha, metal and wood points, oxychloride of zinc and oxyphosphate of zinc.

Professor Sudduth has told us that alveolar abscess cannot exist without there is a specific germ present in the part to produce it. It is undoubtedly on account of such germs not being present that so many canals are left unfilled without an abscess resulting. It is true, however, that many such cases do give trouble although they may not abscess. Frequently patients will say that pressure on the tooth gives pain, that they know the tooth is there or something similar.

In such cases we have a diseased condition ; there is decomposing organic matter from which a gas is being evolved and there are also germs present which aggravate and spread the trouble. The canals not being perfectly filled, the gas escapes at the apical foramina into the surrounding tissues which in time take on a diseased condition. Even after this has all occurred an abscess will not result unless the specific abscess germ is brought from some distant part by the blood and left by it in this weakened tissue.

If this is all true, is it not reasonable to infer that a filling material which can be made to penetrate the smallest canal which an instrument will enter, is better for the average case than any of those which were used at that clinic? Dr. J. R. Callahan has advised using a 20 to 50 per cent aqueous solution of sulphuric acid and the No. 5 Donaldson root canal cleanser for opening the smaller molar root canals to the end. This method has been adopted by many operators and we have seen no objections to it advanced. The only suggestions we have to offer in connection with it is: First, that in a majority of such cases we find that the No. 6 Donaldson root canal cleanser, used with or without the holder is more convenient and serves the purpose as well if not better than does the No. 5. This is especially true where the entrance to the canals is through a distal cavity. Second, that where it is desirable, more rapid results can be obtained by using aromatic sulphuric acid. In Watt's Chemical Essays, page 65, we find the following: "The phosphate of lime in the tooth, which is not neutral but a subphosphate, is not soluble in sulphuric acid; nor is the acid capable of decomposing it, except in the presence of alcohol. It follows then, that this acid does not break down the texture of the tooth to the extent that some others do, simply because it cannot unite with, or under ordinary circumstances decompose the principal earthy salt of which it is composed."

With a saturated solution of the carbonate of soda the action of the acid may be stopped at will. As a filling material for prepared root canals Dr. M. D. Goble, in the May issue of *Items of Interest*, advises the use of gutta-percha points in connection with a solution of

Chloroform .... ℥ss.
Gutta-percha and Resin... ....āā ʒj
M. Ready to use in three days.

We cannot see wherein this solution possesses any advantages over chloro-percha, as one is quite as difficult to introduce into small tortuous canals as is the other. Dr. Edward C. Kirk has suggested filling canals with parafine mixed with aristol; melting it into the canals and tubuli with a heated root canal dryer. This is somewhat similar to Dr. Carl Theodor Gramm's method of using copper canal points and base plate wax, the latter being melted into the canal, which has previously been saturated with oil of eucalyptus, by placing an electrode in contact with the copper point. We cannot see that there is anything to be gained by incorporating aristol with the parafine, as the latter material when cold would inhibit the aristol, which is within its bulk, from exerting any beneficial influence. It would also inhibit any similarly imprisoned germs from doing harm. For filling the tubuli after the organic contents have been eliminated by a bleaching agent, and in order to prevent a recurrence of the discoloration of the crown, white parafine can be melted into them by placing it in the pulp cavity and passing a heated piece of metal over the surface of the enamel.

Dr. A. E. Mascort, of Paris, France, in the May *Cosmos*, says that he uses salol as a canal filling. It melts at 107° Fahrenheit, is aseptic and antiseptic and is injected into the dry canals by means of a heated hypodermic point. His method of introducing the salol seems to us to be incomplete. As a pulp capping, a piece of asbestos dipped into melted salol and then quickly placed over the sensitive tissue should give excellent results.

As a result of numerous experiments, I have found nothing which is to me so universally satisfactory as is the base plate wax, not, however, pure beeswax. This is readily soluble in chloroform, eucalyptol, or any of the essential oils. Such a solution I have found to be very useful for saturating the canal walls. Canal points are also readily made from it which will better fit many cases than do the gutta-percha points.

Following the application of the solution these points, if first chilled and then carried into the canals with cold instruments, are readily adapted to the walls. Now, if this mass of wax is penetrated by passing a heated root canal drier through it the wax will melt and follow the drier as far as it enters the canal, perfectly adapting itself to the walls of the canals and the tubuli as well, if the latter are heated to or above the melting point of wax. The drier should be rotated while in the canal and removed slowly with a pumping motion. Frequently it will be noticed that a canal which is apparently perfectly filled before the heated drier is used will be far from full after this melting process. For the smaller and more intricate canals a small piece of the material may be placed at the mouth of the canals and melted into the latter with a fine canal drier point.

To further condense the filling a ball of cotton forced into the mouth of the canals serves the purpose, and at the same time any surplus material is removed with it. Experiments out of the mouth in filling invested roots in this manner have shown that even where the roots were completely saturated with water and held with their apices uppermost when the wax was introduced, upon being opened the space was apparently perfectly filled.

DISCUSSION.

Dr. REID: I am a little at a loss, after listening to the paper, to know what the doctor recommends us to use. I see nothing that he gains over chloro-percha. I do not see why it cannot be worked into the canal just as easily as the wax. It requires no heating, and with gutta-percha points and sufficient pressure it seems to me as perfect as anything can be.

Dr. SUDDUTH: It shrinks.

Dr. REID: There is a little something in that, but after all, it can be worked down and applied again, and I have never seen anything more satisfactory than gutta-percha. I believe it is nonsense to advocate any one method as best for everybody. I do not believe any one thing should be adopted to the exclusion of everything else. Every operator should test the different materials and use that which proves best in his hands. That is why I use gutta-percha. I can do better with that than with anything else. I have never tried the doctor's method, but I would a great deal rather see him do it first. I take my education largely through the eye, and do not like to depend altogether on description.

Dr. LAURENCE P. LEONARD: Perhaps the majority of failures are due more to a lack of thoroughness in the method than to the particular method itself. It has been my misfortune to run across quite a number of roots that were treated, but not well filled. I do not think it makes so much difference what you fill the root with, provided it is well filled. I believe if we fill perfectly and exclude germs from the outside we may well take our chances of their being lodged there by the blood. For that reason I have used the drier most thoroughly. With reference to saving the pulp, the only ones I can save are those not exposed. I have never yet capped a pulp, but I have regretted it. That is not the experience of some dentists present, but it is mine. I think that a pulp that is healthy should not be exposed. Occasionally you may accidentally expose a pulp, but that is something we ought to avoid. I believe if we are careful we shall expose very few healthy pulps.

Dr. Pemberthy: I have tried a great many ways—starting in originally with lead, then taking up gutta-percha, and finally, in almost all cases, using cement. I would like to know what objection there is to that. There are a great many who do not use it, but I feel I have better success with that than with any other material I have used.

Dr. St. John: I have had no trouble in filling the anterior buccal roots with wax. If one can get into a canal with the smallest kind of a canal drier point, he can fill it as perfectly and more easily than a larger canal with the same instrument. It is impossible to melt wax, placed in the pulp cavity, up into a large canal where only a very small heated drier point is used. It can be readily done, however, by using a large drier point which will fit the walls of the canal closely. If, however, wax canal points are inserted into such canals and are followed by even a small heated drier point the canal will be perfectly filled. I have used wax since last October and during the intervening time have had unfavorable symptoms in but one case. In that case the work was done too rapidly. As much care must be given to filling canals with wax as with any other material. There are some little kinks a man has to learn from experience, in regard to this material, before he will be fully familiar with it. Dr. Reid's argument in favor of gutta-percha is the old one that has been brought forward time and again. Dr. Reid did not fill any canals at the clinic of which I spoke in my paper. I have used gutta-percha, however, for a number of years in the same manner as does the doctor and have been blessed with an average number of successes, failures and partial failures. There are canals which cannot be perfectly filled with either gutta-percha or cement, even though they can be entered with a fine instrument. Wax can be easily removed from any canal in which it has been placed, but the same cannot be said of either gutta-percha or cement.

Progress in Operative Dentistry.

By Thomas E. Weeks. D. D. S., Minneapolis.

At the last annual meeting of this society, I introduced a resolution that the subject of the progress in dentistry during the coming year, be divided, and each division assigned to some member who would edit and present a report; that each division be subdivided into subjects, which should be assigned to members who, from the current literature, should make abstracts of anything in the line of progress, under the special subject assigned them. The resolution meeting with general favor, was carried.

The writer volunteered to be responsible for a report of progress in operative dentistry. A reading of a number of the leading journals and attendance upon several society meetings, have given me suggestions which will be confined to that part of operative procedure aiming to conserve the teeth by operations other than crowning (treatment of pyorrhœa being excluded). My remarks will be in the nature of conclusions, rather than abstracts and quotations from or comments upon any special articles.

We are glad to note a gradual and sure tendency toward the recognition and adoption of principles, instead of methods. Correct methods are indispensable, but methods have underlying principles which must be understood and their laws obeyed, if the operator is to attain the fullest degree of perfection in the execution of his chosen method. Given a condition to be remedied, the causes responsible for the condition must be recognized. If these causes are a pathological condition or a perversion of a physiological action, the principles must be understood. If the condition is one of lost substance, the form, structure, location and environment of the organ must be fully understood ; the principles which govern the integrity and healthy persistence of that organ recognized, and their laws obeyed in the proposed restoration. The characteristics of the materials used and their behavior under manipulation must come under the same law of observance of principles, as must also the instruments employed.

The science of dentistry is comparatively a new one, and the governing principles have not all become recognized and agreed upon. Although there still is much discussion and disagreement, each year marks some improvement. In all science, each new discovery or announcement of a principle, meets opposition ; but if the discovery or principle be a true one, it lives and gradually establishes itself, and its first record endures as a part of the literature of the profession ; while those discoveries and systems which consist of methods, not based upon correct principles, fall by their own weight. Time alone can adjust these matters. The past year has seen its share of this adjustment. What is said here must, in many instances, relate to principles whose discovery and announcement antedate the year past.

Nomenclature. The effort to agree upon terms which shall be so chosen as to carry their definition with them, is certainly accomplishing something. Habit is strong, and we frequently hear men who know better, speak of "plugging" a "dead tooth" with "soft gold," without removing the "nerve;" but the majority of their dental hearers know what they mean and what the proper terms are. Root has replaced fang; cuspid is considered more elegant and expressive than canine; molar is preferred to wisdom tooth. The difference between a cusp and a tubercle is well understood; proximate needs no explanation. Mesial and distal are becoming too firmly established and generally employed to be replaced by other terms. "Occlusal" seems to be accepted as a designation for the cutting edges or grinding surfaces, with "incisal" as a finer distinction for the cutting edges of the wedge-shaped teeth. An expression has been wanting to indicate that wall of a cavity in a mesial or distal surface which is parallel to that surface. This want has been supplied in the term "axial." During the past year there have been published two systems of nomenclature, which seem the result of an effort to be odd and complicated, rather than of an effort to find simple terms which will express much. It remains to be seen whether dentists will prefer several terms to indicate the same surface, cavity, or part of a cavity in different teeth, to *one* term which shall apply to the same surface, cavity, or part of a cavity in *all* teeth. The fact that the term "lingual" has come to take the place of the two terms, "palatal" and "lingual," would indicate the endurance of the latter system.

Contour, Contact and Occlusion. More and more the importance of the principles governing the restoration or establishment of contour in filling teeth is recognized. Nearly all dentists to-day claim to be contour operators. Do all understand what contour means? I do not refer to the definition of the word, but to the application of the term to fillings. What does it mean? It is granted that teeth having bell crowns, standing each in firm contact with their neighbors, in a full arch, touching the next tooth by a small contact point, with broad V-shaped interdental spaces, filled with healthy gum tissue, are the least predisposed to decay.

It is granted that a perfect occlusion of the teeth of the two jaws is necessary, not only for the perfect mastication of food, but for the stability and health of each individual tooth. The conditions cited are ideal, and the ideal exists in very few mouths; but granting that a V-shaped interdental space is desirable; that such a space is the one most likely to be filled with healthy gum tissue; that the preservation of such a space and the stability of the tooth depend upon firm contact with the adjoining tooth; and that an occlusion which will not permit the entire force of mastication to fall upon any tooth in any position of the jaw is necessary; principles have been recognized whose laws call for the establishment of the ideal to the fullest possible extent in all operations upon the proximate surfaces of teeth. What has been written and said upon this subject within the past year, indicates a more general recognition of these principles. Our hope is to aid in its extension. To this end we will define contour as such shape of proximate surfaces as will insure a broad V-shaped interdental space and *hard* contact with the next tooth by a small point on the occlusal third of the surface; such shape of occlusal surfaces as will insure freedom from undue contact of any part of the surface, in any position taken during the act of mastication. This to be the rule, no matter what the material used or the method employed in its use.

Filling Materials—Gold: The usual amount has been written upon this valuable filling material. If it has helped to make more clear the principles which underlie its use, we say continue writing. To judge from the very contradictory statements made by equally good authority, it would seem to be necessary to repeat a few points. This must be our excuse for attempting to give a view of both fields.

One principle seems to be universally established—the cohesiveness of gold. Cohesion is the power existing in metals which holds the particles together, "intermolecular union" (Tibbetts). This force exists in all metals, but because of the resistance of gold to the action of the air or chemicals, it, above all other metals retains the power of reuniting by this attraction between its molecules.

The second recognized principle is that cohesion between two pieces of metal can take place only when the surfaces are absolutely free from impurities, are clean and bright. Here differences of opinion begin. We will present a few points for your consideration. Metallic fillings were first introduced by wedging ropes, ribbons or cylinders of thin leaves of the metal, into cavities having continuous walls. As gold came into use it was introduced in this way, great care being taken to destroy the "stickiness" of its surfaces, which interfered with the perfect wedging or condensation. Gold, thus deprived of its "stickiness" is soft, inherently soft, retaining this quality because it does not become hard or resistant to pressure by the sticking together of its surfaces, as gold which retains its stickiness does ; *i. e.*, *there is no union of the molecules in gold deprived of its cohesiveness; noncohesive gold.* Good fillings were and still are made of noncohesive gold. The requisites are, a cavity having continuous walls like a box or tumbler, and the compact wedging throughout of the component pieces of the material. This preparation of gold has no place in cavities which involve angles, points, or restoration of contour. Hence, as dentistry progressed, the recognition of the natural cohesion between masses of gold was put to practical use in the filling of cavities which under the noncohesive gold regime were impracticable.

If a leaf of cohesive gold is laid upon another leaf of the same, and pressure is exerted over *all* of the surface, the two leaves will be found to be so completely united throughout that they cannot be separated. This, then, is the principle. If a solid mass of gold is desired, it must be built up of a mass having molecular union throughout, of thin layers of gold which is pure and has pure, clean surfaces. *Every portion* of the surface of each layer must be brought into *perfect* contact by pressure or force, with the mass which precedes it. These are principles which are not contradicted. Still, argument is rife as to where cohesive gold should be employed and where noncohesive ; also upon the manner of introduction and the kind of instruments used and force employed in the insertion and condensation of cohesive gold. We will venture a few suggestions after noticing one other fact. If a pellet of noncohesive gold is introduced into a cavity, another may be attached to it by forcing or driving it into the first mass with wedge-shaped points, or points having deep wedge-shaped serrations. This is mechanical union. We have then three principles upon which the insertion of gold in cavities depends, wedging, mechanical union and cohesion. The first depends for its integrity upon the support of the walls of the cavity. The second also depends in a measure upon the same support. The last results in a solid mass which depends upon the walls of the cavity, only to retain it in the cavity against removal by such strain as it is subjected to.

The first two forms of gold require instruments having wedge-shaped points and deep wedge-shaped serrations, if serrated at all. The third form demands that all the molecules of each surface be brought in contact with the molecules of the surface with which it comes in contact. This is accomplished with difficulty, if the surface to which additions are to be made is rough. Instruments having broad faces with rounded edges, and *very fine*, *shallow* serrations, if serrated at all, will best preserve this smoothness of surface.

Regarding force, two surfaces *may* be brought into intimate contact and cohesion of the molecules obtained, by suitably shaped instruments, with pressure from the hand, or with force delivered upon the end of the instrument by a blow from a hand mallet. The same result may be obtained by rapid blows from a pneumatic, mechanical, or electro-magnetic mallet. In the use of the first two methods, the faces of the instruments must be slightly roughened, to prevent slipping. In the last method, the faces may be smooth, because the blows are delivered with such rapidity that the instrument does not have time to slip between the blows.

With this presentation of the principles involved, you will be left to furnish your own methods. Failures to attain perfect results arise from efforts to drag, drive, or spread gold about without regard to its inherent properties, or observance of the principles which govern its use. Failures result also from attempts to manipulate cohesive gold as if it were noncohesive, attempting to wedge it, or unite it mechanically by the use of instruments better calculated to wedge and perforate than to spread out and flatten together. Much improvement has been evident in the past year, by the introduction and adoption of cohesive gold instruments based upon proper principles.

Some suggestions have been made in our own city, for the use of cement, to fasten the first pieces or layers of cohesive gold to the walls of the cavity by adhesion; also for the veneering of large cement fillings with gold. These have been published in *The Cosmos*.

Amalgam. The fact that the best results are obtained by perfect condensation, driving the molecules of the mass into the closest proximity, is being more generally observed. Several persons have suggested combinations with cement. These combinations have ranged from a thin coating of the walls of the cavity, through a partial filling of the cavity with cement, forcing the amalgam into it before setting is complete, up to the method of mixing amalgam with the cement, making the greater portion of the filling with this mass and finishing with a veneer of amalgam. Each of these method has its value.

Cements. The preparations known as oxyphosphate of zinc, zinc phosphates, etc., are evidently here to stay; their efficiency as filling materials, either alone or in combinations, is more fully recognized. How to mix them, how to test them, how to distinguish between a good one and an indifferent one, is better understood, as well as how and when to use them.

Several new preparations have appeared; among them Williams' "Dirigo,'' put up by Ash & Sons, which it is claimed, is antiseptic and nonconducting. It seems to be designed principally as an intermediate, although it has sufficient integrity for temporary outside work. Generally speaking, the foreign cements are better than those made in America. Dr. Ames is about ready to offer something which promises well.

Gutta-percha. There seems to be little to say of gutta-percha. We would offer just one thought, or rather, query. Have you noticed fillings of pink base plate that have maintained their integrity for a number of years, although they were put in only as temporary stoppings? Have you seen any better results with any of the white preparations which are offered to-day?

Tin. There seems to be a renaissance of tin, as evidenced in the journals. As several of the colleges are using tin for practice work in the technic laboratories, there is promise that the rising generation of dentists will understand its characteristics, manipulation and possibilities. With this improvement, tin may take its deserved place in our list of filling materials. As it possesses most of the attributes of noncohesive gold, except its ability to withstand attrition, it is useful as giving the student practice which will enable him to work noncohesive gold. Its characteristics confine its use to the same class of cavities as are indicated for noncohesive gold. It is claimed that fresh shavings of tin possess the cohesive power. Be this as it may, tin in any form has not the hardness and tenacity to make it applicable to cavities which involve restoration.

Canal filling. We cannot close this report without noticing the marked advance in the treatment of canals. The warring hosts who contended for or against immediate filling, seem to have ceased hostilities, and the majority of dentists agree that those cases where fistulous openings do not exist, are not fit to fill while a diseased condition in the apical portion is apparent.

The absolute impossibility of penetrating, cleansing and filling many canals is leading to experiments for the discovery of some better means of opening these canals. Dr. Callahan's method of using dilute sulphuric acid for opening pulp canals, seems to promise success in many cases which have been inaccessible by former methods. Experiments for the discovery of some method or preparation whereby the contents of inaccessible canals might be sterilized, mummified, or in some way rendered inert, have given some results. There is still a fertile field for investigation. What has been done is mostly on true scientific principles.

Our progress is steady. Let us hold fast to the principles which we have ; make our future investigations in a scientific manner, and base our methods upon existing principles, and the new ones which are yet to be discovered. Remember always that true scientific attainments, coupled with perfect methods and skillful manipulation, are the true keys to success.

DISCUSSION.

Dr. Wood : One point in regard to noncohesive gold. The essayist said that with noncohesive gold it is requisite to have continuous walls to the cavity.

At the clinics at Chicago last August I saw a French gentleman, Dr. Ronnet, of Paris, insert a filling of soft gold in a cavity having only three walls and he contoured it too, to a certain extent. The work was done with the clumsiest instruments I ever saw and the result certainly reflected a great deal of credit upon the gentleman as an operator.

Dr. Knight : Dr. Weeks mentioned combination fillings. We have been doing a little of that kind of work, experimentally as well as practically, and have brought some specimens here for the benefit of those of the profession who have not seen this work. The method of preparing this filling is to make a mix of amalgam in the ordinary way for amalgam fillings, then a mix of the cement for ordinary fillings rather thin. Take equal quantities of each upon the slab and grind them together, and roll with the fingers and make the body of the filling of that composition. It is easily put in, is soft, adhesive, sticks to the side of the tooth, in fact can be placed in any cavity. It can be covered with pure amalgam and you have nothing but the amalgam exposed to the fluids of the mouth. Shortly after starting in this work, a patient came in with a large buccal cavity, pulp much exposed, a very sensitive tooth. I could not excavate thoroughly, so I filled the cavity with the amalgam and cement combination. The filling has been in about six months; I examined it the other day and it was solid.

Another case. A gentleman had a bicuspid with almost all of the dentine decayed. I destroyed the pulp and had nothing but the shell—one of those shells that we think we cannot fill with anything but cement. It had the buccal wall almost intact, the lingual wall gone. I first made the mixture of amalgam, laid it on the slab, then made the mixture of cement which nearly filled the cavity. I took a small portion of amalgam and incorporated it with cement and used it to complete the filling. These fillings are composed of three layers, cement first in contact with the walls, then a layer of the compound filling, and then amalgam.

The Harvard cement is slow setting and has the adhesive quality better than most cements. I realize there are some dangers in this method of filling teeth. The first is it makes the operation too simple—it is liable in the hands of some dentists to make them do careless work. I believe as much care should be exercised in putting in a filling in this as in any other way. In the first place the cavity should be dried thoroughly. Care must be taken to have the borders clean and let the amalgam come to the border. It should be packed there solidly—the same as any amalgam or gold filling—and finished properly afterward. The usual amount of excavation is unnecessary if you adopt this method of filling teeth. I would like to see it tried pretty thoroughly this year and have reports made at our next annual meeting.

Question: What is the advantage of the layer of amalgam and cement mixed together over the cement proper?

Dr. Knight: I do not think the amalgam would set. You would have no union at all. I think the cement incorporated with amalgam gives a compound body with adhesive qualities of the cement. I do not believe either one destroys the qualities of the other. We have both qualities combined.

Dr. St John is entitled to the credit of bringing this before the society. He called my attention to the desirability of uniting the two filling materials. His method was just to coat the cavity with this filling of cement and place the amalgam on the thin layer of cement. I took up a tooth one day in the office and cleaned off the decay—no particular attention was paid to the form of the cavity, and placed the filling as Dr. St. John had suggested. It was a large filling, one that under ordinary circumstances could easily drop out, and I took it to Dr. Reid and asked him to examine it and see if it would drop out. He worked five or six minutes and finally took a file and put the tooth in a vice and with an instrument got part of it out. The amalgam broke off and almost half the filling was left in the tooth. After that I dug the filling out to show him.

Dr. DAVENPORT: I was very much pleased with the first part, and, in fact, all of the paper, but the first part especially, in regard to nomenclature. In the past there have been too many different ways for designating the parts of the teeth. I should think it would be well if the colleges would organize and perfect one system. As long ago I think, as when the National Dental Association met here, Dr. Kulp, of Iowa, had a system prepared. It was entirely different from anything before or since and very hard to remember in detail. Graduates of different schools have different terms taught them. These should all be harmonized.

Dr. St. JOHN: The method which I presented to this society last year of using cement as an adhesive medium, I have used constantly since that time and have failed to see a case where it has not been of assistance to me. I believe that every cavity should be well prepared, on mechanical principles. A gentleman was in my office the other day for whom I filled a left superior bicuspid nearly two years ago. The cavity when filled, had no positive retaining form. The mesial wall and but a portion of the buccal and lingual walls was all that was left standing, though the pulp was well protected and healthy. The cusps had been broken off. Explaining the case to the patient, I told him I would like to try a method which I had been using for some time. On examining that filling the other day I found it and the tooth in as perfect a condition as when the former was put in. It saves me much time when used in connection with small gold fillings, but very little of the cement should be used in such cases. I always use it in starting the filling and in the small undercuts, and I use less positive retaining pits than I formerly thought necessary.

I think Dr. F. B. Kremer will recollect a case which I called him to see on an afternoon last spring. There were six medium sized gold fillings which I had just made in the labio-proximate surfaces of the lower front teeth. Five of the fillings were commenced at the same time, a little thinly mixed cement being first quickly placed in each one cf the cavities and followed with previously annealed cylinders of gold which were condensed into it. I use the Harvard cement for this work. Care must be taken to have the margins free from cement which is easily accomplished. I have not tried Dr. Knight's method of surfacing a filling, which is made of thin cement and amalgam mixed together with a thin layer of amalgam, but think the claims he makes for it are very reasonable ones. Mixing cement and amalgam together for fillings is not a new idea. I had my attention called to it several years ago by Prof. Watling, but Dr. Knight has a new idea in his method of furnishing the filling with a permanent surface. The gold veneer filling and my method of lining cavities with heavy gold, of which Dr. Weeks spoke, were explained in the May and April issues of the *Cosmos*. The latter method adds materially to the strength of contour work.

Dr. Laurence P. Leonard: I have been using the cement and amalgam for just about a year. In irregular cavities I believe by placing the cement underneath, it makes the body part of an amalgam filling more spheroidal. This is exactly as nature intended it to be. Hence there is but very little changing of the amalgam after it is once in place. I have not had one fall out.

There is one little joint that I observed, which has not been spoken of this evening. I allude to the filling of the bottom of all deep irregular cavities with cement and while the latter is still plastic, work into it a pellet of soft amalgam upon which can be built a filling of hard or "wafered" amalgam. I have never used the three layers Dr. Knight speaks of. I think it is a good method in some cases, but judge it requires more time and labor.

Dr. Kremer: I am personally obliged to Dr. Weeks for his report this evening. There is one explanation the doctor has given that is of much value. It is the difference between non-cohesive, soft and cohesive gold. It is a problem that has been discussed so often I began to think there was no solution of it. Another thing was the use of sulphuric acid for opening root canals. I have been using it with the happiest results, opening canals that I could not open in any other way. Of course, that like a great many other things, we shall know more about when we have used it longer. From present appearances it would seem to be a success.

Dr. St. John got me in the habit of using cement under my amalgam, and I am now so thoroughly convinced that it is a necessity that I rarely fill a cavity with amalgam without it. I live in the hope that it will do away in great measure with the spheroiding of amalgam. Whether it is powerful enough to overcome that tendency I am not yet prepared to say. I saw the case spoken of where the tooth was broken; also where the round bur had been used. I tried to get some of those fillings out and only succeeded in chipping and breaking, not in dislodging.

Dr. Wood: What is the strength of the aromatic sulphuric acid?

Dr. Kremer: Fifty per cent. I know it possesses strength sufficient to open those canals. If I cannot work it into the canal I fill the pulp chamber and leave it in twenty-four hours.

Dr. Knight: The other day I was rather taken aback at some of my own shortcomings. People ask me sometimes, "Are you a contour operator?" I thought I was. Dr. Bonwill looked at some of my fillings recently and said: "I like these, but I do not like those others. They are not put in properly; they are not contour fillings." They were all my fillings, the proximate cavities in the lower bicuspids were so small I did not deem it advisable to cut away the proximate surface so that the line of union of my filling with the tooth substance would be clear of the point of contact. I was quite severely criticised because I did not do it. I would like to learn the views of some of the rest of the members. I have in my mouth a filling put in in the same way by Dr. Smith some twelve years ago. I do not believe any filling could give better satisfaction, and it was made just the same as those of mine that met with such severe criticism. Is it the best to always cut your cavity beyond the point of contact?

Dr. Weeks: I think probably there are a great many members of the society besides Dr. Davenport who have not been members long enough to remember the system referred to in regard to nomenclature. I would say that the American Dental Association at its last meeting appointed a committee to consider this matter. Dr. Guilford, chairman, had the privilege of nominating that committee. They will prepare a report that undoubtedly will be harmonious and along the lines indicated by a majority of the committee of the American Congress. The Dental School of the Northwestern University, of Chicago, has also prepared a little pamphlet on nomenclature for surfaces and cavities. It is practically, I suppose, Prof. Black's nomenclature. His system seems to be the most popular and will probably be adopted.

I did not notice Dr. Knight's operation as it deserved, for the reason that it has been mentioned in the report of the Minneapolis Dental Society. I paid my respects to it through that, and I knew Dr. Knight would pass the specimens around and explain them. I appreciate the operation very highly. Dr. St. John's operation I knew would come in for full share, so simply alluded to that. It occurred to me when reading Dr. Williams' description of his dirigo cement, which he claims is antiseptic, that if what he claims is true it will be of advantage over the Harvard. It works very much like it, but does not smell like it. It is supposed to be antiseptic.

Many things can be demonstrated before a large body of men to good advantage with clay models and large instruments if clinicians will take the trouble to prepare them. The reason principles are not more apparent is because only one or two see sufficiently well to get the right idea of the operation. The eye will assist the mind in taking in the points. No man can get up and describe a principle upon the ordinary model so that it will be understood as well as if demonstrated plainly upon a large model. How few men can operate in a clinic and give a good, clear, running description. A lecture illustrated as suggested, might replace many clinics and I believe this society might adopt this plan to advantage

There is a contouring for form and a contouring for contact. The dentist's definition of contouring is reconstruction of form. He contours for the preservation of the interproximate space ; not alone for the reconstruction of the shape of the tooth. Dr. Bonwill calls it plus contour.

Dr. LEONARD: I would like to ask Dr. Weeks if he would put in a contour filling when the adjoining tooth is absent.

Dr. WEEKS: Certainly.

Dr. LEONARD : How would you protect the interproximate space ?

Dr. Weeks: There is no interproximate space when the adjoining tooth is missing.

In regard to cutting the walls of the cavity beyond the point of contact, the man who does not exercise his judgment is not worthy the name of dentist. There is no rule to be applied to all operations. There may be one general rule that fits a majority of cases. We all have seen splendid success where the margin of two cavities came directly in contact in mouths that were not particularly cleanly, either. I do not believe in weakening the structure of the tooth to subserve a rule.

I think we have got to use judgment, and I think Dr. Knight was perfectly justified in the form he gave to the surfaces mentioned.

Treatment of Pyorrhœa Alveolaris.

By W. Xavier Sudduth, M. D., D. D. S., Minneapolis.

The paper was preceded by the following abstract of a paper on the "Etiology of Pyorrhœa Alveolaris" read before the local society in May, 1894.

"The writer in that paper held that pyorrhœa alveolaris is a local affection that in some instances depended upon a general catarrhal dyscrasia for its ability to engraft itself upon the tissues; that it was essentially catarrhal in its nature, beginning as a simple gingivitis and extending to the pericementum; that any local irritant persistently applied might lead to it; that the most common cause was salivary calculus, misfitting plates, ligating and wedging the teeth, faulty occlusion and unhygienic conditions of the mouth in general, accompanied by certain constitutional diseases, such as rheumatism, malaria, the exanthemata, frequent pregnancies, gout, and all such debilitating conditions in the order named. We further held that these were largely in the nature of predisposing causes, that the exciting cause of what is generally known as true pyorrhœa alveolaris, was infection from the fluids of the mouth; that the catarrhal processes destroyed the gingival attachment of the tooth and admitted the germs of suppuration always present in the saliva.

A line of experiments conducted in the college the past winter demonstrated the presence of lactic acid in the saliva and especially in mouths in which pyorrhœa was present.

In regard to the loss of the alveolar process it was held that it was not a condition of necrosis but was due to the action of the lactic acid produced in the pockets by fermentation and that the process was almost if not entirely identical with decay of the teeth. As to gout in relation to pyorrhœa it was held that it was not an etiological factor but should be placed as a complication when discovered and that it found its seat in the pericementum by reason of the fact that the vitality had been lowered by previous attacks of pyorrhœa. Two cases were cited at length to prove the position, together with an exhaustive review of the subject of gout. The paper concluded with the following summary:

1. Gout is a painful neuralgic affection usually located in the joints.

2. Pyorrhœa alveolaris is not necessarily a painful disease, although neuralgia may be present in exceptional cases.

3. Gout is a disease confined to middle or later life, while pyorrhœa alveolaris generally begins before thirty.

4. Gout is essentially a disease of men, while pyorrhœa alveolaris affects both sexes indiscriminately, showing a preference if any for the female sex.

5. Pyorrhœa alveolaris is very common in America where catarrhal affections are most common, and where gout is of unfrequent occurence.

6. Gout on the other hand is very common in England, but pyorrhœa alveolaris is much less frequent than it is in America.

7. Then again pyorrhœa alveolaris is more common in the northwestern portion of the United States than in the east, and so also is catarrh, while gout is less frequently found.

8. Constitutional treatment of gout in cases where pyorrhœa is found complicating the condition mitigates but does not cure the local disease.

9. The tophi of gout never produced a drop of pus in the world, which is the principal diagnosticating feature of pyorrhœa alveolaris; therefore, uncomplicated gout cannot be classed as the suppurative stage of what is generally called pyorrhœa alveolaris.

10. Finally pyorrhœa alveolaris is a catarrhal affection of the oral cavity which in many instances depends upon a general catarrhal dyscrasia for its ability to engraft itself upon the tis-

sues. Gout, or a gouty diathesis may be included in this category."

The paper on treatment being one of a series published elsewhere, the following abstract is furnished :

Treatment. In the acute form in addition to the removal of the active cause of irritation some paliative mouth wash should be prescribed, such as listerine, aristol, phenol sodique, Carl Seeler's antiseptic tablet, or solutions of boric acid or potass. chlorate. Where the urine indicates a general acidity of the system advise lithia water or cream of tartar lemonade. In the chronic form the first step, as in the acute form, is the removal of all local causes of irritation including serumal calculus if any exists. Loosened teeth should be banded and firmly fixed in position. All false articulations should be remedied and a general line of local stimulating antiseptics adopted. For stability and variety of form no one drug has been more successful in our hands than the several solutions of pyrozone manufactured by McKesson & Robbins. I use the 3 per cent aqueous solution as a mouth wash in all cases of catarrh. In order to overcome the soapy taste I drop a soda mint tablet into the.quantity to be used just before using. This hastens the liberation of the extra atom of oxygen and increases its antiseptic action, while at the same time neutralizing the small degree of acidity ($\frac{1}{20}$ of 1 per cent) present. Listerine may be used as a substitute for pyrozone in cases where the latter is contraindicated, although I do not consider it as nearly so efficacious a drug in the treatment of pyorrhœa alveolaris.

In the chronic form of the disease the general line of treatment should be stimulating and antiseptic for the local lesion and constitutional where complications are present.

The same line of operative procedure should be adopted as in the acute form with removal of all serumal calculus from the roots of the teeth, together with the washing out of the pockets with some antiseptic solution that will tend to place the parts in a better hygienic condition. A number of drugs have been recommended for this purpose. Among the later ones is pyrozone, 5 and 25 per cent solutions in ether. These may be used as injections with suitable syringes, or applied with cotton twisted on wooden points. The 5 per cent solution will not injure healthy tissues, but will destroy diseased and unhealthy granulations and wonderfully stimulate healing. The pockets in obstinate cases should be packed with a salve made of lanolin and sozo-iodol and zinc, or if the latter is found to be too astringent bismuth may be substituted. In some instances sulphite of zinc made into a paste with gelatin will make a happy combination.

The idea presented in packing the pockets is to keep out the saliva as much as possible and encourage healing from the bottom of the pockets. Unless this is secured a recurrence of the disease is inevitable. In case the patient cannot return every few days for treatment the pockets can be packed with a paste made by adding sulphite of zinc to beeswax that has been softened by the addition of hot water. This will not dissolve by the warmth of the mouth as will lanolin and gelatin, but will retain its form and antiseptic properties for many days. As healing occurs from the bottom of the pockets the mass will gradually be forced out and with the filling up of the pockets a cure will be effected. While it is true that with the reëstablishment of the conditions that originally produced the disease the tissues are more liable to a recurrence of the disease, yet the restoration of the mouth to its normal condition entitles the practitioner to the credit of a cure.

THE DISCUSSION WAS OPENED BY DR. GEORGE V. I. BROWN.

I do not know that the Doctor has left much to discuss. I think he has covered the subject a little more fully than I have ever known one paper to cover all its phases. Usually the treatment drifts into one particular line, but the Professor seems to have covered the whole ground, including constitutional treatment. Possibly his methods of accomplishing all this are not so easily understood as they might be.

First, the cleansing of the pockets. Prof. Sudduth suggested cocaine. In my practice I do not have much success in getting benefit from cocaine in cleansing the pockets. The secretions are apt to interfere with my getting any marked effect. In cleansing one of those pockets you are necessarily working with a fine instrument where you cannot see, and are dependent upon the sense of touch and somewhat upon the sensibility of the patient to tell whether you are working upon the tissue or surface that has been denuded by the formation of the deposit, or impinging upon the live tissue at the edge of the pocket. I find it a very nice matter to reach the right place exactly.

A good many cases of pyorrhœa undoubtedly recur because the cleansing is not perfect. Of course the methods the Professor recommends make it perhaps not so necessary always. I find when my patient tells me, through the pain, that I have reached the depth of the pocket, I know just about the shape of the pocket and where to get at that deposit. With this natural sensibility deadened by cocaine no such warning is given the operator and often grave injury may be done to surrounding tissues. The Professor refers to improper occlusion as one of the complications. I would almost undertake to say that improper occlusion is at least a contributing factor in every case of pyorrhœa. Sooner or later the result of irritation to the peridental membrane, either from concretions about the neck of the tooth, from malocclusion, or other cause, is to induce increased blood supply, and therefore thickening of the membrane which as it becomes chronic forces the tooth a little above its fellows, and whether imperfect occlusion is an exciting cause or not you soon have it from that cause and it therefore demands attention, at the outset.

One of the first things I do as part of the preliminary treatment, is to grind off a little of the tooth and relieve the pressure. The most important work I am able to do toward prevention, by treatment of the mouth, is to perfect the occlusion. I am not satisfied with simply allowing the teeth to come together, but I watch the patients for any little tricks they may have with the mouth in speaking and when they are nervous. I find there are very few persons who have not a habit at times of biting more or less upon particular teeth. I have seen the tops worn flat on some teeth that way. A good many people have a nervous way of grinding their teeth, that they are not conscious of, especially in sleep ; we do not know it, and complications arise. There are other cases where the occlusion generally is imperfect, and the only way is to reconstruct the whole mouth. I know a good many mouths that seemed hopeless, where I have capped or bridged from sound teeth in both jaws, making the occlusion perfect, so the strain would be distributed upon a number of teeth and permanent benefit resulted. Where teeth are affected and very loose you have got to do that, to hold the teeth firmly. Prof. Sudduth speaks of tying and binding them. I know he could have explained that more fully if he had thought it worth while, because I have talked with him about this part of the subject before. I think it is important. We have all seen descriptions in the papers of different methods of tying loose teeth together, with wire or string, but I think it is absolutely impossible to do that and hold the teeth firmly together, especially if very loose. The natural shape of the tooth is narrower at the neck than at the crown, and the tendency is for the ligatures to slide upward or downward to the gum and you have a loosening as the result. On the other hand, if you succeed in drawing the silk or wire down tight enough to hold it, without allowing backward and forward movement, there is a tendency for the tooth fastened to be forced from the socket. For that reason also I have not been able to fasten satisfactorily with bands cemented. Cement will disintegrate. The crowns must be covered as a tooth moves up and down as well as in other directions. I have found it necessary to make regular crowns, cutting the faces out to have as little disfigurement as possible, and setting with gutta-percha. I have a number of cases in mouths of old people, where you would suppose the tooth would not last, and after some five or six years are perfect in condition. They are not any looser, and I am not sure but they are tighter than before, which of course could only be determined by removing the appliance.

In regard to treatment of the pockets where the denuding process has gone to a considerable degree, I generally find it advisable to take a bur and smooth the irregular carious edges of the surrounding alveolus. I do not think we can reasonably expect to find the discharge stop as long as those rough places are left full of bacterial hiding places.

With regard to cleansing the mouth, the first thing I do is to fill the mouth with some antiseptic. Lately I have used peroxide of hydrogen and $\frac{1}{1000}$ bichloride of mercury, about equal parts, syringing the mouth and letting patients hold it there several minutes, repeating the process for some little time. First sterilize the secretions of the mouth, then the pockets afterward. I have prescribed and found useful, glycerine and listerine of each 33, and carbolic acid 33 ; take half a teaspoonful in a third of a glass of water. I instruct them to keep that in the mouth not less than three minutes and as much longer as they wish until the mouth is cleaned. I find that of great assistance.

As far as constitutional treatment is concerned, I seldom find that necessary. No doubt there are cases, but I find when once the malocclusion and other mechanical causes are removed, that the constitutional symptoms disappear. I am very glad to have heard a paper that covers all the points of this subject so clearly.

Question by member: Has Dr. Sudduth found anything that will disintegrate and dissolve serumal calculus?

Dr. Brown: Cannot that be helped by peroxide? Does not the small amount of hydrochloric acid found in nearly all preparations of peroxide soften and assist the removal of calculus?

Dr. Sudduth: Is there any means for reducing the chalky deposit on the tooth without scraping it away?

Dr. Brown: Not that I know of. I have found, and doubtless so have the rest, that it sometimes requires attention every few weeks.

Question: What should be the shape of the instruments used for removing calculus?

Dr. Sudduth: A modified square.

Dr. Weeks: I should prefer an instrument, a section of whose blade would show an equilateral triangle.

Dr. Brown: I take an ordinary hoe excavator of small size and with a wheel on my engine grind the two sides quite flat. That leaves a sharp blade very thin; then run the wheel over the top of it so it will have two sharp edges, triangular in shape. With that I can get to the bottom of these pockets which are usually round.

Dr. Jones: I think the paper very complete, but I want to ask one question. I have failed sometimes to prevent the flow of pus in the pockets in cases where there was a live pulp, but when I destroyed the pulp I had little trouble after that. Whether that is too heroic a remedy I do not know. I have not tried all the remedies you mention. But this has not failed.

Dr. Sudduth: To answer that I should necessarily have to take up another line of thought that I did not touch upon. This really, however, has a place in the treatment of pyorrhœa. It is possible to have in the molar teeth the coronal portion alive and the pulp dead in one of the roots, and with an abscess in one alveolus and yet the tooth respond to all the tests of a live pulp. I do not think the point I made in regard to packing the pockets has sufficiently impressed itself upon the minds of those present. To pack thoroughly with antiseptics is of the utmost importance. Dr. Brown says you cannot see, that it is all a matter of feeling. If you adopt the method indicated of packing the pockets when you take the cotton out a day or two day afterward, you will have a free opening and can see the bottom of the pocket. When the patient returns the condition will be so much improved that you can get down and touch every portion of the calculus. There is hardly a place in the mouth where you cannot with a reflected light and packing the pockets, see all the exposed portions of the root.

A voice: I had a case where it was with difficulty I could get between the tooth and the gum. I can expand considerably, yet I cannot get an instrument in.

Dr. SUDDUTH: In those cases separate the gum at the gingival margins. You cannot work in the dark. It heals nicely.

Dr. BAILEY: In regard to the prescription for cleaning the mouth, will not the water precipitate the myrrh in that solution?

Dr. SUDDUTH: I think it will in time, whether instantly or not I do not know.

ORAL SURGERY.

BY CHARLES A. VANDUZEE, D. D. S., ST. PAUL.

When the subject of this paper was given to me, it was accepted as a duty rather than a choice.

As a student it was one of my dreams that I might in the future take up oral surgery as a specialty, but as the years have rolled along and the exacting requirements of every branch of dentistry have become more and more apparent, I have gradually come to believe that the field is too broad.

The possibilities of dentistry are beyond the conception of not only the general public but of ninety per cent of the men who are practicing it to-day, and it is hardly wise to undertake the study of oral surgery with a view to combining it with the general office practice, though it is absolutely essential that the progressive man shall acquaint himself thoroughly with those conditions which require surgical treatment and with the means and instruments necessary to handle them successfully.

We are consulted daily by patients who trust the welfare of the oral cavity to our skill, and we are betraying a trust if we are not competent to diagnose the pathological conditions of the entire locality.

The operative skill which is absolutely necessary in the oral surgeon cannot be attained without special training and clinical work which must take more time than is available for the most fortunate student of dentistry.

The whole subject of oral surgery is dependent, among other things, upon a thorough knowledge of physiology, anatomy, histology and pathology, together with a ripe and practical acquaintance with human nature.

Who can diagnose a lesion who is not familiar with all the associated parts in their normal condition? I have gone upon the the records in the past as heartily in favor of a more intimate relation between the family physician and general surgeon and the dental practitioner. Let us as dentists arm ourselves with the weapons of equal knowledge of the human form in its various conditions of ease and disease, and then when we diagnose a lesion that requires systemic treatment or surgical interference, let us call in the proper assistance and we have done our duty, not only to our patient but to ourselves and our profession.

Would a general surgeon or physician attempt to construct a denture or a crown, or remove decay from a cavity in a tooth and restore the lost tissue? We do not meet our professional brethren on a proper basis and the reason is not far to seek.

I do not claim that the fault is upon one side only, but the fact remains that through fear of exposing our ignorance of the subject, we hesitate to call upon our brethren of the other branches of the healing art and often slur over or ignore matters worthy of consideration, perhaps risking the future health of our patient and betraying the trust we have assumed. This aspect of our condition could be written upon indefinitely and you doubtless want something more closely connected with the title. I will introduce the history and treatment of the following cases:

Case 1. Alveolar abscess. Male; age 23. Called in consultation. The region of the anterior portion of right superior maxilla swollen and painful. Central, lateral and second bicuspid loose. History: Second bicuspid had been treated for putrescent pulp and cavity filled with chloro-percha and gutta-percha point some months before. Lateral carried a Richmond crown; central open with slight discharge of pus through canal. Diagnosis: An abscess involving the body of the bone with possible perforation of antrum from second bicuspid. Treatment: Extracted affected teeth and washed with peroxide of hydrogen, packed socket of lateral superficially with campho-phenique, the other two with tents of same material extending well into the bone. Painted surrounding soft parts with iodine and aconite, equal parts; repeated dressing and cleansing with peroxide for three days until inflammation had subsided. Patient had recovered spirits and pain had entirely ceased.

With probe located a channel connecting the openings where central and bicuspid had been extracted with considerable ragged bone. The soft tissues on floor of antrum and nasal cavity were unsupported but apparently intact. On fifth day made a liberal application of 10 per cent solution of cocaine, burred away dead bone, removing the outer plate of the alveolar process entirely over the central; washed copiously with bichloride, 1 to 1000 and peroxide, packed with aromatic sulphuric acid full strength on cotton, repeated dressing two days, then dressed with campho-phenique for one week; at the expiration of which the patient went away for two weeks, being provided with dressing materials and instructed to continue as long as the cavities would retain same, the body of the bone having been replaced by new tissue. Patient returned well, and barring the loss of three teeth and a little shrinkage over the central socket, none the worse for his troubles.

There is a moral to be pointed from this case. The root filling had been forced through the apex of the bicuspid and lateral and the ends of both roots were slightly absorbed, which goes to show that we must be careful how we force foreign matter into soft tissue, and again, the age of the patient and general healthy condition of the body must be given credit for the rapid recovery.

Case 2. Alveolar abscess, Mrs. S. Age forty, sent to me by physician. Temperature 103, pulse 120. Discharge of pus from socket of left lateral, nose, and hard palate. Palatal tissue very much indurated and sagged away from the bone over a spot as large as a silver quarter of a dollar.

The history of this case is a sad one for those who must some day answer to a higher power for criminal, reckless abuse of their patients. The lateral had been filled by a cheap dentist in a cheap way, for a low fee. Death of the pulp followed at once, and after a meager attempt to treat through the canal the tooth was extracted, the patient was told that all the danger was now over and the abscess would get well in a few days. She went home, continued to get worse for a week, consulted a physician and fell into my hands.

She was poor and it was a case with no fee in prospect. Under a daily treatment of peroxide with campho-phenique tents in the two openings that could be reached, the temperature soon subsided and the inflammation and discharge of pus gradually decreased. I could not succeed, however, in taking my patient's mind from her condition and she refused to believe that she could get well.

The loss of so great a portion of the bone and consequent lack of support to the floor of the nose and hard palate, made the use of the bur impracticable, except in the alveolar region, and therefore the slow process of solution of the walls with acid was continued for some weeks, which resulted in a separation of a portion of the thick median ridge at the junction of the palate processes of the maxillæ, which was removed with the forceps through an incision in the soft tissues of the palate. This left the tract free to close, which was accomplished by irritation with tincture of iodine and dressing with iodoform gauze. The floor of the nose presented at this time two openings about three-fourths of an inch apart, which soon closed and the new growth of tissue pushed toward the socket of the lateral, which under nitrate of silver stimulation, closed gradually from the bottom and sides toward the surface.

The patient made daily trips at first from her home eight miles in the country, and later every second, third and fourth day during the slow process of recovery for four months, and then assumed the treatment herself, to complete the closure externally, coming once a week for examination. The complete closure of the external opening required five months. I attribute the slow recovery to mental unrest, insufficient diet and the age of the patient, but the result of the slow method of acid solution in so complete a recovery without loss of the hard palate, has pleased both my patient and myself.

A general surgeon would undoubtedly have removed the entire bone and have left the patient minus the teeth of that side and have obtained a recovery in a fraction of the time.

I believe we should handle such cases as these unless there are complications which require the knowledge of the physician or surgeon to combat. Also cases of fracture of the maxillary bones, as the occlusion of the teeth is one of the most important results to be attained, but for cleft palate or the removal of morbid growths of considerable size, where the ligation of arteries and the maintenance of absolute antisepsis of hands and instruments is required, we should go to those whose daily work requires the equipment and manipulative skill which such cases must have.

I remember a case where one of my patients was injured by a street car accident, both superior and inferior maxillary bones were fractured and my mechanical treatment consisted of a simple bandage to hold the teeth in their proper position, which resulted in a complete and perfect recovery in a few days. In other fracture cases which I have been fortunate enough to see, there has been little need of consulting outside our own ranks, and I trust the day is not far off when we shall be called to assist or take the whole responsibility in this class of cases, as it requires the most perfect knowledge of the relations between the maxillary bones and the teeth to accomplish the best results.

With the progress which is rapidly placing the requirements for practice upon a constantly higher plane, such confidence and consideration cannot long be withheld.

DISCUSSION.

Dr. BROWN: Before opening the discussion I will show some little things I brought. They illustrate that both dentists and physicians sometimes fail in treatment.

[Dr. Brown then cited and explained several cases that had gone the rounds of prominent practitioners, passing from dentists to physicians and back to dentists again, some of which he had been successful in treating by discovering and removing particles of dead bone that had escaped notice, and exhibited pieces of necrosed bone, each with a recorded history of its own].

It generally falls to my lot to defend the physician; I blame the dentists. I think the physician would rather have his patients cured than not. It is more common with them to have consultations. It is a regular thing and a creditable thing; but with the dentists there is a feeling that they will be thought ignorant. Dentists as a rule do not make physicians realize the extent of their knowledge.

When dentists prove to physicians that they can do some things that physicians cannot they will gladly consult with us. We do a great deal better together than either could do alone. If, as a class, we could talk with physicians and in a modest way call their attention to things they have not thought of, they would begin to think of them. A number of physicians are using a mouth wash I gave them, with patients in fever. They know it is a good thing. So, while I believe in the dentists being thoroughly competent, I think we ought to cultivate a pleasant relation with the doctors.

Dr. T. E. WEEKS: The first important feature in treating any complicated case that comes to us is absolute honesty—honesty with ourselves, our patients, and our maker, and if we follow that absolute honesty, we shall make no mistakes. We shall know whether we have the ability to treat a given case or not, and if we know we have not, our duty is to seek the ability elsewhere. In that one word ability is included the knowledge anatomical, physiological and pathological, to treat these cases successfully. Further, it is absolutely necessary to keep our hands and our instruments clean; in a word, have perfect asepsis. For a dentist to send a patient to a physician because he is a physician, is the biggest fallacy in the world. If you recognize any occasion for sending your patient anywhere else, or for calling somebody else, it is your duty to call for some one you know has the skill needed, I do not care whether physician or dentist. If there is a dentist in the city who has that skill, send for him. The fact that a man is an M. D. and pretends to be a surgeon is no recommendation for calling upon him to treat these cases.

I think probably you will gain as much by calling the attention of the members of the society to these facts, as in launching into a number of these cases, and I do think honesty and common sense will do more to reach the desired end in the treatment of many cases of oral surgery that come to us, than any amount of theory you may bring to bear upon the subject, and it is our duty to equip ourselves to the extent that we shall be able to know what is our duty in any particular case that comes to us.

Another point is thoroughness. We allow ourselves to be hurried and we do not get at the bottom cause in the first instance. When we get at the cause and do *all* we think ought to be done, or is wise to do, we shall accomplish better results. The most skillful surgeons, or the most thorough ones, do this. They do not temporize from day to day, letting the disease gain upon the surgeon, instead of the surgeon gaining upon the disease.

Dr. REID: I would like to emphasize what Dr. Weeks has said in regard to honesty. I think, in the first place, a proper, thorough diagnosis is necessary. If you do not know enough to handle the case, be honest and say so. I am opposed to pretending to do what you cannot.

Dr. KNIGHT: I do not believe that every man who has the title M. D., is an oral surgeon. In fact, I believe that very few surgeons are oral surgeons in any sense of the word—perhaps fewer dentists are, but if there is a good dentist who is an oral surgeon in the city, I think he is a safer man to recommend than the majority of physicians. I have come in contact with three or four physicians in consultation, and they are physicians in good repute, but their method of treating diseases in the mouth was unscientific. They are slow to take suggestions from dentists.

REPORT OF THE EXECUTIVE COMMITTEE.

Mr. President and Gentlemen of the Minnesota State Dental Association: There has been a feeling on the part of a number of the dentists of the State that a feature of considerable interest might be added to the programs of State societies in reports of work done in local societies. These reports should be a brief epitome of all that is new and all of interest which has been presented during the year as essays, descriptions of new operations and methods, etc. It will not only establish a closer bond of union between State and local societies, but it will preserve in the published report of the State society a record of all that is worthy of preservation in those local societies which have no direct medium of publication.

To this end, and that Minnesota may take the initiative in such a movement, the Minneapolis Dental Society authorized its executive committee to prepare, and ask your executive committee to accept, this report of what has been accomplished.

While the program was not carried out to the letter, there was evidence in the discussions that it had influenced and directed the thought of the majority of the members. While the clinics were not so generally participated in as was desired, they were very beneficial, and in a number of instances, encouraged private investigation and experiment, some of which resulted in the operations and methods which are presented to you at this meeting.

Those operations which are presented by the gentlemen themselves will be honored only by simple mention. One feature adopted by the Minneapolis Dental Society we desire particularly to mention and commend. This is the monthly dinner which was partaken of at 6 o'clock; coming between the clinic held at 3 o'clock, and the evening meeting. These dinners were well attended and did much to promote that social feeling which is so necessary a feature of all societies of this kind. They will be continued during the coming year, and we hope to have the pleasure of seeing even more of the faces which grace this meeting, than we were privileged to last year.

At the clinic on cleansing, preparing and filling root canals, some half dozen of the members performed the operations upon natural teeth having the apices of the roots enveloped in yellow wax and the roots invested in plaster. After filling with various materials and by several methods the teeth were dismounted and their canals exposed by filing the roots. The results showed that a number of the canals, some of which would not be considered difficult of access were imperfectly filled. Observation failed to give little preference in regard to perfection of introduction, between cement with some kind of a point and chlora-percha and gutta-percha points.

The clinic, however, had the effect of inciting a number to further experiment in their own offices. These experiments have been of benefit to many and have undoubtedly resulted in an improvement in the results obtained in canal filling.

At the evening meeting the clinic and the general subject was thoroughly discussed and many good points brought out.

At the clinic on gold fillings a number of gentlemen prepared gold in several ways for introduction into cavities. The chief points brought out were the difference in working and the shape of instruments for inserting noncohesive and cohesive gold, and the advantage of convex faced, pointed foot-shaped pluggers over flat-faced, blunt or square pointed pluggers, in matrix fillings. One filling was inserted using the former shape on one side and the latter shape on the other side of the same filling. When the filling was finished the margin which had been condensed with the pointed instrument was perfect, while the margin which was condensed with a square point was imperfect.

In the evening Dr. St. John read a paper and gave illustrations upon the auxiliary dovetail in cavities in the incisor teeth. In the first form a dovetail-shaped mortise is cut upon the lingual surface, Fig. 223, page 525, DENTAL REVIEW for July. This in place of the customary retaining shape between the plates of enamel in the incisal third of the tooth. The second form is illustrated by Figs. 224 and 225 on page 525 DENTAL REVIEW. It consists of the addition to the mortise on the lingual surface of a dovetail-shaped tenon which is built over with cohesive gold, and results in this tenon of dentine and enamel being *mortised into* the filling.

At the clinic on aluminum Dr. Geo. Monson, of St. Paul, demonstrated his method of swaging aluminum hot, using wood forms to drive the metal to place. By this method only fifteen or twenty minutes is required for swaging the most difficult case.

Dr. Kremer demonstrated the Carroll casting apparatus, showing each step from the making of the matrix to the completed plate.

Crowns. Under this subject Dr. F. B. Kremer presented a porcelain-faced crown in which the face is cemented into the recess provided for it. A pinless English tooth has a dovetail-shaped tenon ground upon its back; a mortise is prepared to fit it by burnishing thin gold over it ; this gold is attached to the cap, strengthened and properly shaped upon its lingual surface with a 22k gold solder. The mortise is so shaped that the face must be inserted from the point or occlusal end. This method is applicable to dummies for bridge work. It is quite as neat as the results obtained by soldering and avoids the danger of checking the face by heat, and it also renders repair in case of accident, easy without removal of the piece from the mouth.

Dr. H. A. Knight presented an all porcelain crown with band. He uses a Logan crown and attaches it by the method described by him.

At this meeting Dr. A. G. Bennett explained his method of getting impressions of difficult cases of partial dentures where the remaining teeth lean toward each other at their occlusal portion. It consists in grinding the teeth into place first, fastening them in position with hard wax, then taking the impression.

Dr. W. P. Dickinson exhibited some occlusal surface forms and explained his methods for making these surfaces of gold crowns, also exhibited his forming pliers.

Cements. A series of experiments were made by Dr. J. D. Jewett, which showed that the majority of cements increase in weight after being subjected to saliva. The experiments at the clinic and the discussion brought out the conclusions that the majority of failures result from imperfect mixing, lack of care in inserting, and subjection to the saliva before crystallization is complete.

Dr. I. C. St. John demonstrated his methods of using thin cement on the walls of cavities as an *adhesive* for other filling materials, and for the filling of large cavities with frail walls, veneering the surface with iridium gold, No. 60.

Dr. Sudduth presented Dr. Sichel's cement, which seemed to be entitled to a position among the best. Its peculiarity is in the addition of oxide of aluminum to the powder, during the process of calcining, and adding phosphate of aluminum to the liquid.

Dr. Sudduth also demonstrated a method of making cement fillings which have a metallic surface. This is accomplished by incorporating aluminum filings with the cement while mixing. When the mass is set the surface is burnished; this spreads the metallic particles over the cement.

Amalgams. The clinics demonstrated that amalgam fillings cannot be perfectly finished at the same sitting at which they are inserted and that those operators who interfered with crystallization by forcing the molecules of the mass into more *intimate* contact, secured the best results.

Dr. H. A. Knight demonstrated his operation of partially filling large cavities with a mixture of cement and amalgam, veneering with amalgam. The amalgam is first mixed, then it is incorporated into the cement liquid with the powder. The major portion of the cavity is filled with this mixture, and the filling completed with amalgam.

Pyorrhœa Alveolaris. The clinic was held at the University Dental Infirmary. A large number of patients were present, some of whom had been under treatment suggested by members of the society. A case was presented with a marked gouty diathesis. Three members of one family, all under seventeen years of age were present. All showed well-marked cases of pyorrhœa; two had some irregularity of the teeth. The clinic was interesting as illustrating the value of systematic clinical observation of this disease. Some points demonstrated. Gout not the *cause* of case in hand, but general condition exerted an influence upon the local disease. Malposition of teeth and imperfect interproximate spaces a predisposing cause. *Thorough* cleansing first requisite in treatment.

At the evening session Dr. W. X. Sudduth presented an exhaustive paper upon the etiology of pyorrhœa, an abstract of which is given in connection with his paper on treatment of pyorrhœa.

The society has to report an interesting special meeting which was an informal reception to Dr. W. G. A. Bonwill, of Philadelphia. Dr. Bonwill gave a detailed exposition of the law of articulation which was demonstrated practically by grinding up a full upper and lower set of teeth, using the anatomical articulator.

He demonstrated that in nature the teeth support each other throughout the arch by intimate contact in the occlusal third ; that there are broad interproximate spaces which permit of a full alveolar septum between the roots which is covered with gum tissue that completely fills the interproximate spaces. Also that the teeth occlude in such a manner that some point of each tooth touches a point of a tooth in the opposing jaw in any position of occlusion which is taken in the act of mastication. These things are necessary for the perfect preservation of the teeth and are the guide for the arrangement and occlusion of artificial substitutes. Dr. Bonwill also filled a tooth in the "rubber tooth form" using his mechanical mallet, demonstrating the rapidity and perfection with which gold can be condensed with a *smooth* oval point.

Altogether your committee would report a successful winter's work ; one which has had a marked influence for improvement, and one which marks an epoch in the history of the society. We trust that your honorable body will accent the first year of its second decade by requesting the St. Paul Dental Society and the Southern Minnesota Dental Association to make similar reports at your meeting in 1895. We believe that it is in the line of the true spirit of progress.

Respectfully submitted,
T. E. Weeks,
J. D. Jewett,
F. B. Kremer,
Executive Committee for 1893-94.

Dr. H. L. Cruttenden, Northfield, Minn., under the head of "Report on Bridge Work" exhibited a number of interesting models showing some difficult restorations by bridging. His explanatory remarks are omitted because they are incomplete without the models, which from their nature are difficult to illustrate.

Dr. Martin F. Lowe, exhibited and described the construction of an aluminum obturator with movable velum. This device was exhibited before the Minneapolis Dental Society, and will appear with illustrations in a subsequent report of the proceedings of that society.

REPORT OF MASTER OF CLINICS.

Dr. F. B. KREMER : Dr. H. A. Knight, of Minneapolis, demonstrated the technique of the crown known as the "Knight Combination Crown." The clinic very fully demonstrated the claims that have been made by Dr. Knight, for his crown, that it has the merits of cleanliness, strength and beauty.

Dr. George S. Monson, of St. Paul, demonstrated the making of appliances for the correction of irregularities of the teeth. He also made and tempered a screw tap, and constructed a jackscrew, giving a very interesting talk on the principles underlying the practice of orthodontia.

Dr. W. N. Murray, of Minnepolis, made a large contour gold filling in an upper first molar, using noncohesive gold for the body of the filling, facing with cohesive No. 4, condensing with an eight ounce lead mallet. The result was, seemingly, all that could be desired.

Dr. E. B. Weeks, of Litchfield, presented a set of six enamel margin trimmers devised by himself after suggestions contained in Dr. Black's article published in the *Dental Cosmos*. They appear to be admirably adapted to the purpose for which they are intended.

Dr. T. E. Weeks introduced enlarged models in brass of pluggers for cohesive gold, for use in demonstration before classes, as they come from the manufacturers, showing that foot-shaped pluggers were given flat faces by the makers, instead of convex faces which the principles governing the condensation of cohesive gold demand.

Prof. Sudduth diagnosed the case of John Wall as epilepsy complicated by trigeminal neuralgia and tic douloureux incited by suppuration of antrum. The neuralgia being the starting point of the epilepsy, treatment could not be instituted to-day, as the patient was not prepared to give the necessary time, but will be treated at the college dispensary, later on, by trephining through the outer plate of antrum, using Prof. Sudduth's special system of drainage.

Dr. George S. Monson, of St. Paul, demonstrated an instrument of his own devising for use in adapting bands, for regulating appliances, which seemed to fill the requirements admirably.

Dr. Knight exhibited an instrument which he called a cheek distender and demonstrated its use as an assistant in taking impressions of the mouth and in filling buccal cavities in molars and bicuspids.

Dr. Knight also demonstrated Dr. Sargent's improved jackscrew. The instrument consists of the so-called Angle jackscrew, supplemented by a coil spring between nut and sheath, giving continuous pressure if desired. The spring may be removed by the operator at will.

Dr. T. E. Weeks exhibited a molar tooth (vulcanite tooth form) with large contour gold filling, inserted by Dr. Bonwill before the Minneapolis Dental Society, during his recent visit here. The time consumed in making the filling was fifteen minutes, the operator using a smooth foot plugger and the Bonwill mechanical mallet. It is of especial interest for the reason that, according to Dr. Bonwill, it was the first gold filling he had ever inserted by artificial light. The result was, apparently, perfect in all points.

Dr. T. E. Weeks also exhibited a tooth form in vulcanite rubber for use in teaching and in clinics instead of extracted teeth, thus avoiding the annoyance caused by fracture of the enamel.

Dr. C. W. Jones exhibited an instrument for shaping shell crowns. The appliance consists of large heavy pliers, one of the beaks of which is armed with a wheel carrying a number of dies, while the opposing beak is supplied with counterdies to match. The application will be readily understood.

The Doctor also exhibited an original appliance for double rotation of the central incisors, showing models of cases operated upon.

Also an appliance for dividing a current of air from a pump operated by the dental engine, enabling him to use two or more pneumatic mallets operated by one air pump, thus avoiding the necessity for changing plugger points during an operation. He further exhibited a modification of the pneumatic mallet by means of which the blow is delivered only when pressure is made upon the plugger point.

After completing some routine business, and the election of officers, the association adjourned to meet in St. Paul the second Wednesday in September, 1895.

Officers—President, C. H. Robinsin, Wabasha; Vice President, Scipio Bond, Anoka; Secretary, H. L. Cruttenden, Northfield; Treasurer, H. M. Reid, Minneapolis; Master of Clinics, Geo. H. Monson, St. Paul.

Executive Committee—F. B. Kremer, Chairman, Minneapolis; Geo. H. Monson, St. Paul; C. M. Bailey, Minneapolis; J. D. Jewett, Minneapolis; C. W. Nutting, Spring Valley.

Membership Committee—C. H. Goodrich, St. Paul; W. N. Murray, Minneapolis; W. C. Merrill, Albert Lea; L. C. Davenport, Moorhead; J. H. Harris, Lake City.

CHICAGO DENTAL SOCIETY.

Regular monthly meeting, held November 6, 1894, the President, Dr. J. H. Woolley, in the chair. Meeting was called to order at eight o'clock. Dr. G. B. Perry read a paper on "Temperaments."

DISCUSSION.

Dr. **LOUIS OTTOFY**, in opening the discussion, said: I always have compassion for the essayist, who, either from choice or necessity, has selected a subject, whose nature is such that it can not lead to definite conclusions, while he who opens a discussion on such a subject is to be congratulated, because he can make his remarks brief, for usually every one has more or less pronounced views, and consequently can discuss it.

The question of temperament, so far as it relates to dentistry, is undoubtedly one by which we all have been more or less influenced at different times, without really having studied the subject. Every one of us has some idea regarding it. It is peculiar, that although Aristotle was the first to have made scientific observations regarding temperament, the classifications made by him are practically those recognized at the present time. Of course, it was noticed long before his time, that people were different; that is, that they were not alike; their actions, their behavior, desires and so on, were different; just the same as physical appearance and mental qualities were different, and thus came the division of temperament into classes, practically making four divisions.

It is generally understood that there is no such a thing as a distinct temperament. Temperament means "a mixture," and consequently a man cannot be of one temperament, because if we were entirely nervous, it would not be "a mixture," hence it is generally accepted that all of the temperaments are present in each individual, but some are more pronounced than others, and the predominant temperament is in a general way said to be that of any particular person.

Bringing the subject closer to dentistry, it has its influence in the selection of artificial teeth. We all have seen the wearing of artificial teeth that look hideous and unnatural for some reason that we cannot readily explain. We cannot give the exact cause of the peculiar appearance. Of course, there is a co-relationship between the teeth, the features of the face, the contour of the body, color of the eyes, hair and so on; and from the appearance of all these combined we decide upon the temperament. Consequently, the teeth themselves must conform to rules governing temperament. When artificial teeth are selected for a mouth, where natural teeth are still present, it makes no difference whether we know anything about temperament, because we have a guide in the remaining teeth. The best opportunities are presented to test our knowledge of temperament, when we make artificial teeth, for cases where all the natural ones are absent. I never tried to burden myself with trying to remember just what kind of teeth ought to belong to such and such a temperament, because it takes only a minute to look it up in a book, in which you can find a table and see just the kind of teeth to be used for a particular kind of person. On general principles, it is safe to say that the teeth should be selected one or more shades darker than one would naturally select, and larger than your own inclination (especially that of the patient) would dictate, in order to be nearly right. The most hideous appearances are made by the selection of teeth too light in color and too small in size. If one does not study temperament, let one follow the rules mentioned.

Considering temperament in operative dentistry, there is a great deal in the way of treating a person of a particular temperament, and I expect every one of us understands the difference in treating different people without being able to define it.

In a dental office, in my experience, it generally seems that the nervous temperament predominates. The Germans, it is claimed are lazy, loggish, have a flabby skin and large lips, half closed eyes, and all that sort of thing ; they are of the lymphatic temperament, yet it is easy to bring the nervous temperament of such a man to the surface if you fill teeth for him. You will be sure there is a nervous temperament in that man, as well as in other individuals. So in practice at the chair, I have not particularly noticed any difference, or followed any especially different treatment on account of the temperament. No doubt all of us take into consideration the general temperament of the patient and designate him as nervous if he seems nervous, and phlegmatic if painful operations are met with indifference.

Regarding Christian science, it does not come exactly under the head of temperament. Christian scientists are, as a rule, classified with people belonging to the nervous temperament. But when they can overcome pain in the way in which the essayist has related, if they are really nervous and can overcome it, there seems to be a power over the temperament that has not been noticed before, and if in this way pain can be overcome, it is barely possible that this is the secret of the Christian scientist's power.

Dr. J. W. WASSALL : I have listened to the paper to-night with a great deal of interest, and there was one point which occurred to me which I will speak of, that the people who come to us and say they are very nervous and cannot bear pain, and whose nervous systems seem to be the most highly developed part of their nature, are the patients as a rule who make the very best people to endure pain, because they have suffered much, and have learned to bear it and get through with it. They suffer less afterward than the strong, healthy individual who has never had a day's sickness in his life.

There is one other subject that I think might be *apropos* to this question ; that is the subject of hypnotism in dental operations. I disbelieve in it very thoroughly myself, but I have heard of others who have done some wonderful things. This of course has a great deal to do with the "temperament" of the patient. I should think that would be a question for discussion on this subject.

Dr. A. B. Allen: I should like to mention one patient who came under my observation to-day with a nervous temperament. Two or three days ago she came to me and said she could not possibly stand it to have her teeth separated in any way whatever. I finally told her that by using tape it would be less sore than by any other method, although we could not accomplish by one application what we could with rubber. The placing of this cotton tape between her teeth was very difficult on account of the patient seizing my hand every time I undertook to do it. I finally did succeed in separating them a little, but when she came back at an appointed time the tape was out. I placed another one in with the same result. So she came in to-day, and I placed the rubber dam on, telling her she would have to bear with immediate separation; and that I could not accomplish the work without proper space. It was a mesial cavity in the right upper lateral. I applied the separator and finally succeeded in gaining her confidence. I was really surprised to see how well she bore it, and before I got through with the operation, that cavity was thoroughly prepared, and I had an ample separation.

Dr. T. L. Gilmer: This is a subject about which I know but little. Some years ago I read considerably about it, but found great difficulty in applying the small amount of knowledge of the subject I had gained. I frequently found that I deceived myself so that I gave up the intricate subject.

One thought occurred to me while the paper was being read; the temperament of the dentist must be taken into consideration as well as the temperament of the patient. It is my experience that we often have patients whose temperaments do not fit ours in some unexplainable way; such patients are liable to be badly served, as we cannot give them such perfect operations as we give those who are in perfect harmony with us.

A short time ago I had a patient, a most estimable woman so far as I know, but she was of a peculiar temperament, so peculiar that it was impossible for me to do good service for her. I had no trouble with any other member of the family and should like to have retained them, but I worked with such difficulty for her and the result of my operations was so poor, that I felt that I could not do otherwise than request her to find some one who could better serve her. I was frank with her, telling her the reason, so far as I knew it. Naturally it offended her,as she could not fully realize the situation. She will find some one who will do much better for her than I could possibly. We often find patients coming to us from good operators, who have fillings and other work done by them not nearly up to the average. We may have no difficulty whatever in serving them well, our success depending upon perhaps a greater compatibility of temperament.

Dr. J. A. Swasey: I do not believe I know much about temperaments, but I agree with Dr. Gilmer, that it is really a satisfaction sometimes to get rid of a patient. I can see just how he felt; I have done the same thing myself, and I think he took the right course. It is a manly and honorable way to treat the patient.

Dr. C. N. Johnson: I am not very familiar with the subject of temperaments, but I do think that intuitively, whether we know it or not, the question of temperament enters into our practice more than we realize. We intuitively form an idea the moment a patient comes into our office as to what his characteristics or temperament may be, and unless we study this matter, we are not going to be very successful as practitioners.

We all know it is utterly impossible to successfully approach two individuals in exactly the same way. This difference in individuals reduces itself down to the matter of temperament, and I sincerely trust that the essayist of the evening will follow this subject out in greater detail than he has, so that we may get something more tangible, because I think it is a subject that the profession have not paid enough attention to.

Dr. Noyes: To the question of temperament as it relates to our daily practice, I have never given much thought, because the subject seemed to me so much mixed and so difficult of separation and analysis that it would appear difficult to arrive at definite conclusions in a discriminating way. At the same time, we all of us meet different people in different ways, and some of us, I think, do so intuitively, or if not that, our habit and ability are acquired by experience and observation without much discriminating and analytical reasoning about it. It is undoubtedly true that some individuals are not, so to say, compatible with each other, and cannot become so to such a degree as to make them satisfactory in the relation of patient and operator, as Dr. Gilmer has suggested. It is true, also, on the other hand, that a man may greatly increase his power of compatibility, with a wide range of different temperaments, dispositions and characters, and a man in a profession or business who can meet, upon a footing of friendliness and compatibility the largest number of people, is the man who will be most successful. Everybody recognizes that. Of course, this question of temperament is closely related to it, although it is not all of it. For myself, I meet people without the slightest reasoning in regard to it, and without any determination beforehand that I will treat this man this way, or another man another way. It is my belief that sincere good will, with true frankness and honesty are at the basis of compatibility in almost all cases, and that there are very few individuals who cannot be made compatible to us without much further effort outside of the natural and unaffected exercise of those qualities.

Dr. J. H. WOOLLEY: I cannot follow this subject closely because it needs a great deal more careful thought than I have had time to give it. What I wish to say in regard to temperament is this, that I think we all exert an unconscious influence over each other. A physician's influence in the sickroom affords an illustration of this; his very presence is sometimes a benediction, and more beneficial to the patient than his medicine. This quality possessed by the doctor may be considered temperamental. There is a story of Goethe which relates that he was in a box at the theater when there arose a cry of fire; by a simple wave of the hand he quieted the excitement. There is a similar story of the Czar of Russia to the effect that during the plague in that country, when the people were in great distress and confusion, he appeared among them, and by a few words of command calmed their fears and allayed the popular agitation. Now, in regard to our patients, one point to be considered is our personal relations with them If they see that we are sympathetic we gain a controlling influence over their minds. This sympathy should not be of so demonstrative an order as to exaggerate the patient's fear of pain or sense of danger. The dentist needs to cultivate self-control, as well as those under his charge; and it is this combination of sympathy and self-reliance on the operator's part that best wins the confidence of the suffering patient.

Dr. E. M. S. FERNANDEZ: While several of the gentlemen were speaking, I could not help wondering at the people of Aristotle's days. I think if he were with us to-day, he would subdivide temperaments into four thousand or perhaps four hundred thousand classes instead of four. I believe that at the present time there are about as many temperaments as people, for it seems to me that every person is of entirely different temperament. I believe the word temperament ought to be changed for the words peculiarity of human nature. Nevertheless people can be treated alike in masses. In my experience in the practice of dentistry, I find a good way to get along with some people is by studying their faults, and with others by acceding to their good qualities. In regard to hypnotism or animal magnetism, I must say that I believe these powers to be very limited. I have taken considerable pains at different times, to attend hypnotic and magnetic exhibitions, but always found them humbug comic exhibitions where people were previously posted on what they were to do.

INCIDENTS OF OFFICE PRACTICE.

Dr. NOYES: *Mr. President, Ladies and Gentlemen :* I do not like apologies in this meeting, but when a man is asked at five o'clock to open a discussion on office practice at eight o'clock, he is entitled to mention that fact, and I am afraid your regret will be only less than my own in view of the fact that Dr. Crouse, who was to open this discussion, has been unexpectedly and suddenly called away, because I understand that he has something good to say which I hope we shall be able to hear next month.

Since it is only a makeshift to bring me in here, perhaps I cannot do better than to describe a makeshift operation which I happened to have occasion to perform to-day, and I wish to preface my remarks by saying it was emphatically a makeshift, and not the operation that I would recommend as the proper and best one under such circumstances ordinarily.

A right lower second molar which had carried an amalgam filling for ten years, I think, and had been patched and refilled at various times, chiefly patched, shed its filling two or three days ago, and upon an examination to see what should be done with it, I found that it had split ; which accounted for the dropping out of the filling I suppose. It was somewhat tipped forward and articulated with the upper tooth only at its distal portion, and that portion fortunately was strong. The whole body of crown except that was nearly gone ; the lingual wall broken off half way to the gum upon its mesial half, and around the mesial wall. That is to say, it was broken about half way to the gum through the lingual, two-thirds of the mesial wall and the anterior third of the lingual wall. Buccally, it was decayed across the whole length, and the split was bucco-lingual. I was not quite certain whether it split down through the anterior root, or whether the anterior root all belonged to the split portion. The loosened piece was very firm and separated but little. It had only been a day or so since the crack had been made, and the separation was practically nil. I said to my patient that the best thing to do was to cut it down and crown it, but it was not a happy tooth and root to get into shape and put a crown on, and he did not want it done, which was decisive. The other consideration naturally would be to put a band around it, but in this particular case, and I will admit as a makeshift, instead of doing that I put a good sized platinum wire around it and twisted the ends together tight so as to bring the tooth solidly together in such a way that the twist of the wire and the whole portion of it on the buccal side, would run across the cavity, and be entirely enclosed within the filling which was made afterward. The tooth was so broken that the wire would come around the bucco-distal angle through a little notch, in such a way as to absolutely prevent it from working any lower down toward the gum, and when brought into place it lay close to the gum on the lingual side, but not so as to interfere with it in the least. Of course, I do not expect that operation is as perfect as I could wish an operation to be; as I say, it was a makeshift which, under the particular circumstances of the case, I thought was justifiable. It was with the greatest difficulty that any reasonable dryness could be procured at all, on account of the extreme distance of the decay which reached to the process. Of course, the amalgam filling absolutely holds the wire in position, and the wire holds the filling. There is no getting away from either one of these as long as they last, and I hope when that fails, the tooth will possibly be in such a shape as to admit of fitting a gold crown upon it.

There is one other use I sometimes make of wire that I will speak of while I am on my feet. Though not related to this one, it might possibly be called a makehsift, too. I refer to the fastening of very loose front teeth. In that case also, as you are aware, the ideal operation, and the one most satisfactory, in some respects, is to put bands around the teeth close to the articulating ends. These will hold the teeth firmly in place, and offer the best opportunity that can be had for cleansing them underneath the bands and joinings, but they are unsightly to such a degree that some people will not consent to their being placed, and they are expensive. This other plan of which I speak, I have resorted to oftener in such cases where they are so far gone as to offer no reasonable hope that the teeth could be kept in the mouth more than a limited time—teeth in which the vitality of the pericementum was wholly gone or nothing left of it except a trifle at the extreme point of the root, and in some cases I have fastened such teeth, although they were free from any vital connection with the tissues. It is done by using small platinum wire and weaving it back and forth in a figure "8" around as many teeth as are necessary to have the whole number of teeth enclosed perfectly firm and secure. It should be done carefully, going back and forth several times so as to have at least three or four circles of wire around each tooth, and the wires should be crossed over and under in such a way as to hold the different strands in close proximity and prevent them from separating. If that is carefully done, it will last sometimes a few months, sometimes for years, and the whole work can be done with forty cents' worth of wire, and fifteen minutes of time, which is altogether a different matter from putting on half a dozen bands united in one piece and fastened with phosphate cement. The wires are low enough down so as to be entirely out of the way so far as any disfigurement of a lady's mouth is concerned, and usually they do not cause any decay. It does interfere with the cleansing of the teeth, which is the objection to it, and would be fatal in cases where we can hope for radical or permanent cures, but these instances in which I use it are those which I have regarded as beyond the hope of permanent cure and it serves as a makeshift to keep one or two or three or four lower incisors in the mouth comfortably for a longer time than they could be kept there otherwise. Patients, if they will return frequently and have deposits removed, such as they cannot get off themselves, may often keep these teeth in very fair health, as well as rigidly held in place. Of course, the general objection will arise as to whether such desperate cases can be kept in good enough health to justify their retention in the mouth. I think they can in many instances at least, and certainly people like to have them as long as they can.

Dr. J. A. SWASEY: Speaking of office experiences, I had a case of an upper cuspid with two small superficial cavities which gave the patient severe toothache. It did not appear that either cavity approached the pulp, but on examination I found a slight fullness of the gum on the lingual surface. I drilled into the tooth and discovered a living pulp. This puzzled me, but on working at the case to-day I discovered a cavity large enough to admit the end of a small burnisher situated about the sixteenth of an inch below the gum margin on the lingual surface of the root. I had never seen one in that position on that kind of a tooth before. The margins of the gum except at this point were perfect, and there had been no absorption or deposition of calculus worth mentioning. I asked Dr. Thompson what we had better do with it and he has been telling me ever since. We finally decided to remove the pulp, amputate the tooth and crown the root. To this end I have fitted a band letting it extend up the lingual surface of the root at least a fourth of an inch, and I am still in doubt as to whether I have perfectly covered the cavity.

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AN APPARENT LACK IN THE WRITINGS OF SCIENTIFIC MEN.

It seems to be an unwritten law with most scientific investigators that in publishing the results of their labors the proper course to pursue is merely to record experiments, produce statistics or formulate data. To draw deductions of a practical application from their work would seem to be considered outside the province of the man of science. As one of them said to us recently: "It is not for the truly scientific man to draw deductions at all. It is for him to make experiments conscientiously, carefully and systematically, and to publish the results without bias. At that point his office ceases. It is then for the reader to draw his own deductions, and make the practical application."

This is all very well in a way, and would be perfectly permissible were the conditions such as to justify it, but the fact is that the average reader is not always capable of intelligently drawing deductions, and even if he were he will seldom or never take the trouble to do so. Nothing will cause the average dentist to avoid an article sooner than to see the record of a long line of experiments, or an extended table of statistics without a practical point sticking out somewhere. This may be a lamentable state of affairs, and may argue strongly against dentists as readers and thinkers, but the fact is apparent and cannot be ignored. If scientific investigation is to benefit dentistry, scientific articles must be read; and if scientific articles are to be read they must be carried down to a practical application. No need to tell us that such a procedure would be opposed to the established canons of scientific workers. We have no argument here against pure and abstract science—we are in favor of everything that tends to broaden the profession—but if scientific investigation has any one aim in view more than another it is to benefit humanity. After all, when reduced down to the last syllable of argument, the purest science is the most practical.

In a general way the failure to draw deductions on the part of scientific writers may be traced to their modesty, for truly scientific men are modest. They argue that the combined judgment of a large body of readers is better than their own individual judgment, but just at this point we fear they take too much for granted. They do not stop to consider that the reader has seldom or never made himself so familiar with the subject as has the man who performs the experiments, and who goes through a long course of study leading up to, or as the result of, those experiments. The fact is that too many of our scientific writers assume that the reader is more familiar with the subject than most readers are. The scientific man himself is familiar with it—he has studied it till all of the details are engraven on his mind, and he considers it a species of affectation to mention matters which—he argues—are so self-evident.

Records of experiments are often given without the slightest intimation to the reader as to the significance of the methods pursued, and frequently the end of an article is reached without the average reader being able to determine in his own mind what it is all about. This is mainly the reason why scientific articles are not more widely read, and it is a matter which scientific men may remedy if they will. In doing so we do not think they will in any way interfere with a purely scientific habit of thought, and we are quite certain they will immeasurably extend their usefulness.

THE ERUPTION OF A THIRD SET OF TEETH.

What appears to be a perfectly authenticated case of the eruption of the third set of teeth comes from West Plains, Mo. Dr. Geo. Turner, of that city, a gentleman of thirty-eight years' practice in dentistry, sends us the following particulars, with full permission to use the names: Some time in the summer or fall of 1893 a lady patient of his, Mrs. M. M. Reid, thirty-five years of age, had her upper teeth extracted for an artificial set. The teeth were inserted and Dr. Turner heard no more of the case till the spring of 1894, when the lady's husband called at his office and notified him that for some unaccountable reason his wife's gum were so swollen and sensitive that she could not wear her teeth. Subsequent development showed that she was erupting a third set of teeth. Most of these teeth were insecure in their attachment and the patient removed them one after the other as they irritated her till she came to one molar which proved too firm for her and she called on Dr. Turner and he extracted it. In all there were fourteen teeth of the third set. Dr. Turner writes on November 8, that he has inserted the second set of artificial teeth and that at that date everything seems normal. In correspondence with the patient, however, at a later date, November 21, she writes that she is now erupting the fifteenth tooth. Where the thing will end no man may know, but from present indications there would seem to be little cause for fear of a tooth famine in Missouri. In character the teeth are described in the following words by the patient: "They were all small and straight just like baby teeth." This is about the description one would expect of a third set of teeth, but we have never heard of an instance where so many of the third set have appeared. Now that the ball has been set rolling let some other State report.

DOMESTIC CORRESPONDENCE.

New York Letter.

New York, December, 1894.

To the Editor of the Dental Review:

New York had an avalanche November 6. Tammany snowed all under till spring, doubtless. A "Strong" mayor is elected. Hill and his henchmen appear like a lot of dentists at a clinic—all looking down in the mouth. It is easy to get politics into dentistry and not know it.

Dr. Wm. H. Dwinelle is confined to his bed in a very enfeebled condition. He is at his native place, Cazenovia, New York. The old landmarks are passing away quite rapidly of late. There will be a good many commendable references to his ability in handicraft when he has passed out of our sight. We notice the statement regarding Dr. Webb's operation on page 830 in the November letter is misleading. So we reform the sentence. Dr. Webb made an extensive filling, the result of a challenge concerning putting on a clamp. It was in the mouth of the late Dr. Meiggs, of New York, who afterward died, his death being hastened by the excessive use of tobacco. This reminds us now of what we have often thought concerning Dr. Webb's death. Since the accumulation of cases of appendicitis we have been impressed that his difficulty in the first stage might have been appendicitis. We recall Dr. Atkinson's intense interest in the case, and he urged an operation for the removal of the disorder which was thought to be in the colon, and ultimately proved to be a cancer of that location. We have thought the same concerning the late Dr. Wm. H. Allen's case, who also died from cancer of the colon. Dr. Atkinson believed that a successful operation could have been made in both cases, taken early.

Who is right? Dr. J. Leon Williams, of London, says that a portion of decay can be left in a cavity with perfect impunity—making it antiseptic. Ottolengui says in his book, Not so. Thousands of practitioners know that Dr. Williams is scientific. It is proved, notwithstanding the Scotchman says, Not proved. Not many years since F. Y. Clark said at a meeting of the Odontological Society that if you did not saturate your cavities with carbolic acid you would find not many days hence bacteria crawling out at the edges of your fillings. That was when it was thought and believed that they had teeth and horns. Bödecker quoted from a German writer that he had seen bacteria sitting upon a crystal of carbolic acid complacently feeding upon it. A good deal of hash has gone the rounds.

Dan Bryant, the colored minstrel, used to say he liked *hash* because he always knew what he was eating. This reminds us of an experience that put us in doubt on mulling a big morsel at a boarding house many years ago (in Springfield, Mass.). With no little mortification we got it into our hand and under the table leaf and found it a big piece of stale, hard-fried "nutcake" or "doughnut." The food we eat makes the individual. It makes his mood quiet often. What does one know of what one eats at the general eating-house? We meet men who talk that way about the journals, yet they do not trouble themselves much about what is written.

Many a time have we been asked, when referring to a published article, " Why, where did you see that ?" and, when told, it proved that it was in the one journal that they took ; but " I really have not read my last (or sometimes the two last) journals." We have seen journals lying on the counters of the depots for two months after date, belonging to members of our profession who were prominent. It is a marvel how little time some have for intellectual refreshments. We notice how gross some are becoming in their later years. It is not a good sign. Some big heads are growing down into the abdomen. It is not scientific.

We were walking on Fifth avenue with one who has distinction, and will have more in after days when another generation will review his works without prejudice. He is at seventy, but spry and full of ambition. He says it is a glory to be living. He is as active at the chair as a student just from college.

We also had a Saturday afternoon stroll on Broadway lately, and met the genial O. E. Hill. He has no blood (political) relation with "David," but he has a leaning to politics and an excellent taste in his neckties. He says he has not been very well for the last three years. He has been notably absent from meetings of the Odontological Society, of which at one time he was a bright satellite and coruscated in their salons, and not infrequently swung the gavel, he being the Vice President. It may be surmised that the fact that he now purposes to renew his evenings out, and again convene the third Tuesdays under the electric lights of the Academy of Medicine, whether there may not be an approach to a new deal in some new line of action. Whatever may be the faults of the Doctor—he has them, he is of like passions with all of us—no one can accuse him of being a dullard. No, he has often made things piquant and decidedly lively. He is the last one to let anything pass which he suspects of not being a square deal. He works on the square, but he rarely goes by the compass. He has an original method of his own, and he hardly ever fails of getting there, even if by a little elasticity, rubber dam style. The Doctor possesses a sterling quality—true friendship. He did think much of "Papa" Atkinson. We recall his last visit to the Brooklyn society, and there made his last talk before the dentists, being noticeably feeble. He left directly after this talk, and going out no one in particular bade him adieu. Dr. Hill hurried into the hallway and gave him his cheering wishes, little thinking that he was taking his hand for a final earthly separation. Speaking to a friend just after meeting Dr. Hill on Broadway, and referring to his absence for so long a period at the Odontological Society meetings—for he has fraternized frequently and heartily with the first district all these years—he says: "Don't you know why he has not attended of late the convocations of the Odontological Society? Well, he did not like their treatment of the memory of Dr. Atkinson." History does repeat itself. Dr. Wells may get a remembrance by a monument in one of those tasty Washington parks in which the city abounds. No city like our national city. But no city has such extremes of characteristics with its inhabitants. There is a division that represents wealth and culture on the most æsthetic lines, and of the most independence; another absolutely lacking in independence. Here is an illustration: At a time of an unexpected change of administration one of our foremost professors was carried by a political illusion to entertain the thought of an utter abandonment of all professional ambitions, that he might secure the golden egg from the political patronage that was hinted to him that he could readily capture. But better counsel prevailed.

Dr. Talbot is verily true in charging that we as Americans claiming scientific knowledge yet withhold recognition of originality by others. Here is a case in point. While reading the able article of Prof. Cryer before the Academy of "Stomatology" in Philadelphia, published in the November number of the *International Dental Journal*, we note the merited allusion to Prof. Garretson's accomplished fame in oral surgery, but how could the writer pass by the name of him who has put such an auxiliary in the hands of our skillful Garretson, namely the surgical engine? Why make no mention of Dr. Bonwill as the noble inventor? Prof. Garretson has acknowledged that it is second only in value to the discovery of anæsthesia. All honor to him because of this just recognition. Here is another vital omission of recognition concerning the conservation of cicatricial blemishes, as compared with the prevailing practices upon the face. What man has so emphatically cried against that pernicious common practice of defamation as the late W. H. Atkinson? By his teachings and practices, he for thirty years led many a practitioner to put into practice simple methods for many oral operations. We are aware that Dr. Atkinson was sometimes quite ridiculed because of his seeming inadequateness of exhibition of blood curdling instruments. Another fiftieth anniversary will come; Dr. Atkinson's name may get a just recognition. We get it direct that Columbia College has no open doors for dental schools without a certainty of generous endowment. Now let some of the ambitious dentists put up their bonds. If they may not have the kind of ability that would reflect honor upon such an institution then help some worthy ones into the positions, who have ability but not the shekels. We listened to some side talk of a bevy of men a few evenings ago which was glib over *new* dental college prospects, affiliating with Bellevue under the protection of the University of New York. There is so much smoke just now, there is doubtless some fire.

The First District Society in their November meeting was edified by a very instructive essay from Dr. Stowell, of Pittsfield, Mass. Subject, "Exercise and Dietary Influences upon the teeth." For the advocacy of principles on which depend the prevention of decay of the teeth it is absolutely sound; yes, unanswerable. Dr. I. W. Thayer, of Williamsburgh, Mass., supported the views of the paper by a scientific statement, as will be recognized by those who know science when they see it. Local exercise and suitable diet will not in a day prove itself, but in a generation it would. As was said by others, there is a tendency to an improved physical condition, yet with this there must come an association of better dietary habits; and behind all this there is a greater need of an upward moral living.

Yet it will be said as it has been said by one particular practitioner in answer to that oft-repeated statement that "teeth kept absolutely clean would never decay,"—"Yes, but the millenium has not come yet." What hinders its coming except our failure to obey our innermost conscious direction? The day will come when it will be revealed that science has our entire and highest interests in its control.

Prof. Bödecker presented a copy of his work on the "Pathology of the Teeth," to the First District Society at its last meeting. There can be only words of commendation for his faithful and honest labors of years, all in our day. It is an object lesson of what industry can do, and stands out in contrast with much that comes to nought in many careers. Such names as Kingsley, Black, Talbot, Bödecker and others, will go on and up in their influence while hosts of others will be forgotten because of indifference. Every man has one talent, but if "hid," it is of no good. Well do we recall when Bödecker read his first papers which now grace this work. It was asked, "What can all this have to do with dentistry?" It was questioned whether he should be allowed to go on with the reading and consume the time of the society. Who took up his defence and carried the vote to go on with the reading? Dr. Wm. H. Atkinson, and the author of these letters only. Many a time have we at Dr. Atkinson's office been asked to listen to his first writings and to criticise anything that needed criticism—not fault-finding as too many think. We now see that we were at school while listening to those writings. Such principles as our intimate association with Dr. Atkinson taught for thirty years gave us, are untold in value. They have packed us full of "stored radiance" that no man can ever take away.

We were in the Doctor's office from October to March before his demise. No pen can ever reproduce the value of those last hours spent with him the "High Priest" of the dental profession. Some day we trust we will see an open door to give a eulogy of this man who spent himself so literally for his profession as no other dentist ever did.

A clinic was given in the afternoon previous to the meeting of the First District Society. It was fairly attended. The chairman, Dr. Palmer, a "hornet" born in New Jersey, is a buzzer and will make things hum. Some one may get stung in the jumbo clinic in January.

Dr. Leroy is also a firm believer in the value of clinics. He is a faithful adjunct to the committee. My advice is to be in New York in January at the clinical congress of all nations. New York and Brooklyn and New Jersey consolidated into the greater city of all cities.

The article that most attracted our attention at the last clinic was sandpaper disks oiled with olive oil which holds all the gold which is taken off the gold filling. Just lay them aside and when you have accumulated a bushel of them, cremate them, and a button of gold will be the result. A little thing, but it pays. Dr. W. Morrison, of St. Louis, was at the head of the list for a clinic, and in bigger type than the others, but he was called home before the time. New York knows how to emphasize its favorites. They always print McKellops in *italics*; and then, he always speaks in *italics*, especially when he tells us he never has used a bit of amalgam. "What a pity," Dr. Clowes says, and we say so, too. Come in out of the wet, Doctor, it is going to reign. This according to Old Probabilities.

Dr. Huntington, associate of Dr. E. A. Bogue, gave a very good and conservative paper regarding contour and concave fillings. He believed that neglect in the direction of the contour produces a pressure of gum tissue away from the neck of the teeth, and if there be a tendency to calcareous deposits they will locate themselves even to the apex of the root. He thought that general opinion tended in favor of contour. He closed his paper with a conundrum, as Dr. Morgan characterized it, "How do you fill pinhead cavities on the proximate surface of bicuspids and molars?" One said he separated sufficiently and put tin into them. Another cut from the proximate surface of one tooth by the grinding surface and then in that space he arrived at the cavity in the other with gold; this he did as a rule. Dr. Huntington emphasized that he took a week for gaining space for contouring; this indicates too much weakness for these times.

Dr. S. G. Perry under the caption of "Moderation of Statement and Practice," said, "that most likely George Washington could not tell a lie because those carved bone artificial teeth prevented his articulation." George was cutting his incisors at the time of that incident. He made but one bite at the cherry, and said he did his cutting with his hatchet. After he cut his eye teeth he buried the hatchet and the country had peace.

N. B. Note our correction regarding what we said in our November letter of Dr. Webb. Things were a little mixed. "The little Quaker," as he was called, was "*Simon Pure.*" He was a *jewel* of a dentist. Blessed be his memory.

QUID NUNC.

THE KNIGHT COMBINATION CROWN.

CHICAGO, November 30, 1894.

To the Editor of the Dental Review :

I have just read with great interest the article on a "Combination Crown," by Dr. Henry A. Knight, of Minneapolis, published as a part of the proceedings of the Minnesota State Dental Association, in the last issue of the DENTAL REVIEW. I have for the past year been making a similar crown and one which, in my opinion, possesses at least two points of advantage over the one introduced by Dr. Knight, namely: Strength, and ease of construction. This crown I described in discussing a paper read before the Odontographic Society of this city, in April, 1894.

My method, in brief, is: First select a Logan crown suitable as to size, shape and color—and herein lies the weak part of this method, as I do not see how such a selection is possible by any dentist who is so situated as not to be able to run into a dental depot and do his own selecting. I often find it difficult, though I have only to go across the street. We will suppose we have a superior central incisor to crown. Cut off the tooth at the gum line and a little below all around. For this purpose I find the Ottolengui reamers admirably adapted. Enlarge the canal sufficiently to receive the pin of the Logan crown, and try in the tooth before grinding it that there may be no mistake in the selection. Remove what little enamel there is left on the root, which is easily done with Dr. Case's scalers. Fit a narrow band of 22 k. gold and grind flush with the end of the root, lay this on a flat piece of pure gold, about thirty or thirty-two gauge, and solder by placing a small amount of solder on the outside of the band and holding over a Bunsen burner. For this as well as the previous soldering of the band I use 22 k. solder. Trim off the surplus gold around the band, but not too close. Grind away the palatal portion of the crown the same as advocated by Dr. Knight, but do not disturb the pin. Place the cap over the end of the root, and with any sharp pointed instrument make a small hole in the center of the cap. Into this insert the post of the crown and force into position. When the correct position is obtained remove the tooth, leaving the cap, and force the post through a piece of the same pure gold as was used in the cap and large enough to more than cover the ground surface of the crown. Burnish down around the edge and trim off, leaving an overhanging margin of one line in width. It is not necessary to solder this disk to the pin until the final soldering is done, as it will cling tightly enough to remain in position. Now place some sticky wax around the pin, warm it over a spirit lamp, and place in position. Remove parts held together by the wax, invest and solder with 20 k. solder. The wider this V-shaped space is, the easier it is to flow the solder. This may also be aided by packing the apex with foil. When this crown is completed I have secured the same result as Dr. Knight, except

I have not left the palatal portion of the tooth. This I do not believe is necessary. I have, on the other hand, by not cutting off the pin, gained strength to the crown, a result very desirable. And withal, I have simplified the operation, having on several occasions completed it and set it at one setting. For setting I prefer gutta-percha. Being able to deflect the pin either forward, backward or laterally, I see no necessity for cutting it off.

H. H. Wilson.

MEMORANDA.

Merry Christmas and Happy New Year to all!

Dr. C. E. Dickinson, of Fond du Lac, Wis., is deceased.

Prof. C. M. Bailey, of Minneapolis, was a recent visitor in Chicago.

ODONTOLOGICAL SOCIETY OF CHICAGO.

The following is the list of officers elected for the ensuing year: President, Dr. J. A. Swasey; Vice President, Dr. C. N. Johnson; Secretary, Dr. Louis Ottofy; Curator, Dr. E. A. Royce.

SOUTHERN CALIFORNIA ODONTOLOGICAL SOCIETY.

The following committees are appointed for the year ending October, 1895; Operative Dentistry, Drs. W. R. Bird, C. W. Sylvester. M. E. Taber. Prosthetic Dentistry, Drs. C. V. Baldwin, L. N. Bedford, G. R Knepper. Pathology and Therapeutics, Drs. A. H. Palmer, F. M. Parker, Peter Hendricks. Histology and Microscopy, Drs. J. D. Moody, J. T. Price, H. W. Brodbeck. Dental Literature and Education, Drs. F. M. Palmer, R. H. Shoemaker, P. R. Reynolds. New Appliances and Inventions, Drs. L. W. Wells, L. E. Ford, D. R. Wilder. Dental Legislation, Drs. H. W. Moore, J. C. McCoy. Program Committee, Drs. J. D. Moody, Chairman; J. M. White, C. V. Baldwin, R. W. Whomes, Secretary. The regular meetings of this society will be held the first Tuesdays in February, June and October, 1895.

E. L. Townsend, *President*,
Los Angeles, California.

STUDIES IN PYORRHŒA ALVEOLARIS.

The Minnesota State Dental Association has instituted a new course of study with a view to formulating something definite regarding this disease. A committee was appointed to arrange for a systematic study of the subject and this committee has just prepared through its chairman, Dr. Dickinson, a circular pamphlet designed to be sent to members of the profession who will volunteer to furnish data bearing on the subject from cases in practice. The pamphlet contains a list of contributions to the literature of the subject, a list of medicaments suggested for experimentation, and a list of questions for the practitioner to answer. Finally there is a space to record the treatment given each case, making altogether a pamphlet of nine pages. We are impressed with the evident thoroughness which marks this work and we confidently hope that when the returns are all in something definite may be formulated and given to the profession.

Those who wish to take part in this study will please write for a pamphlet to the chairman, Dr. W. P. Dickinson, 612 Dayton Building, Minneapolis, Minn.

ALUMNI CLINIC.

The Alumni Association of the Chicago College of Dental Surgery, purpose holding an all day clinic on Jan. 9, 1895, at the college building, corner of Wood and Harrison streets. This will be followed in the evening by an entertainment and luncheon. The committee has worked faithfully to make this clinic a monster success, and from the program which they present it would seem that this success is assured. The following is a partial list of the clinicians:

G. W. Toles, Kenosha, Wis.; C. H. Robinson, Wabasha, Minn.; F. F. Fletcher, St. Louis; H. E. Fox, Bessemer, Mich.; W. E. Griswold, Denver; W. C. Barrett, Buffalo; H. B. Wiborg, Milwaukee; J. G. Reid, C. E. Bentley, J. W. Slonaker, B. D. Wikoff, R. B. Tuller, A. H. Peck, B. S. Palmer, E. M. S. Fernandez, C. N. Johnson, E. Honsinger, J. Austin Dunn, F. H. Zinn, C. N. Thompson, W. H. Taggart, O. A. Chappell, T. W. Brophy, E. J. Perry, W. T. Reeves, W. L. Copeland, M. D., Geo. J. Dennis, H. C. West, W. H. Damon, Mt. Vernon; C. B. Rohland, Alton; W. G. A. Bonwill, Philadelphia.

GENERAL INDEX.

A card, 279
A case in practice, 837
A case of bridge work, 721
A contribution to the etiology of neuralgia of the fifth nerve, 144
A criticism, with suggestions, 530
A cursory survey of some of the papers presented to the Columbian Dental Congress, 85
A few considerations in surgery for the dentist, 1, 93, 168
A few suggestions relative to cervical margins, 719
A dialogue, 767
A model report, 826
A Modern Wizard, 372
A practical treatise on mechanical dentistry, 58
A protest against the use of glazed paper, 127
A review of new remedies, 865
A summer vacation, 592
A teacher, the responsibilities of, 750
A treatise on pyorrhœa alveolaris, 542
A word of caution, 197
A word to dental students, 677
About various methods to avoid the removal of devitalized tooth pulps, 70
Abuse of bridge work, 196
Address, doctorate, 305, 392
Advance of dental science, the, 749
Alloy fillings, finishing, 218
Alloys, fusible, 284
Alumni Association, C. C. D. S. (officers), 543
Alumni Clinic, 939
Alumni meeting, 195
Alumni News, The, 764.
Aluminum, applications of, 254
Aluminum solder, 765
Aluminum plates, swaged, 481
Amalgam, 416
Amalgam alloys, testing, 752
Amalgams, under what conditions may they be used successfully, 248
Amalgam, use of, 285
American Dental Association, 603
An apparent lack in the writings of scientific men, 929
Anatomy and pathology of the teeth, the, 835
An electric furnace for baking porcelain, 840
An important duty, 115
Annual address, President's (Hayden Dental Society), 98
Anonymous communications, 679
Another death from chloroform, 512
Answers to questions concerning anæsthetics and obtundents, 163
Antidote for morphine poisoning, 143
Arizona Dental Association (officers), 287
Articulation of gold crowns, the, 806
As others see us, 146
Atkinsonian Society (officers), 287

Behavior of gold under the plugger, 320
Bleaching teeth, 14, 235
Bleaching teeth, pyrozone for, 276
Bleaching teeth, with remarks on some chemical reactions, 240
Books received, 58, 59
Bridge work, abuse of, 196
Bridge work, a case of, 721

Care of the Teeth and Mouth, Popular essays upon, 141
Caries, the prevention of, 199
Case in practice, a, 837
Case of restoration of the nose with porcelain, 731
Catching's Compendium of Practical Dentistry, for 1893, 282
Caution, a word of, 197
Cervical margins, a few suggestions relative to, 719
Chemistry, 763
Chicago Dental Club (officers), 143, 652
Chicago Dental Society, 25, 103, 186, 262, 287, 439, 664, 919
Clinics at societies, 359
Coagulation, 760
Cocaine, danger in, 766
Cocaine, death from, 275
Cocaine, the awakening effect of, 145
Cocaine, test for, 373
Code of dental ethics of the American Dental Association, 289
Code of ethics, the, 274
Collect your bills, pay your debts, 436
Columbian Dental Congress, Transactions of, 752
Compend of dental prosthesis and metallurgy, 835
Concerning anæsthetics and obtundents, answers to questions, 163
Considerations in surgery for the dentist, a few, 1, 93, 168
Crown, the Knight combination, 814, 937

Danger in cocaine, 766
Death from cocaine, 275
Death from chloroform, another, 512
Deformities of the head, face, jaw, and teeth, etiology of osseous, 371
Delta Sigma Delta, 145, (Journal) 765
Dental anatomy, human and comparative, a manual of, 762
Dental and naso-laryngeal surgeon, points of common interest both to, 473
Dental caries, etiology of, 493
Dental Colleges, 36
Dental colleges, the relation of the profession to our, 409
Dental degree, the, 273
Dental education of the public, 785
Dental education, practical, 771
Dental literature, how best to read, study and write, 350
Dental nomenclature, a practical system of, 284
Dental pulp, extirpation of, 314
Dental science and literature, report of committee on, 421
Dental science, the advance of, 749
Dental students, a word to, 677
Dentilavus detergens, a new preparation, 259
Descriptive anatomy of the human teeth, 834
Dinner to Dr. W. G. A. Bonwill, 764
Discovery of anæsthesia, semicentennial of, 533
Diseases and injuries of the teeth, 57
Diseases of the peridental membrane, and the uric acid diathesis, 449
Disks and strips, lubricate your, 120

Disinfectants, 10
Doctorate address, 305, 392
Doctors can practice dentistry, 144
Dr. Angle's appointment, 827
Dr. Brophy's appointment, 64
Dr. Eames' death, 291
Dr. Gilmer's appointment, 143
Dr. Harlan retires from the editorship, 34
Dr. W. D. Miller's appointment, 278
Dr. Chas. H. Osgood, resolutions on death of 66
Dr. Sawyer's death, 64
Dr. H. H. Silliman, resolutions on death of, 765
Dr. Weeks' articles, 679
Dunglison's Medical Dictionary, 58

Editorship, Dr. Harlan retires from the, 34
Electric furnace for baking procelain, an, 840
Electricity in dentistry, 568
Electro-therapeutics, 878
Elements of success, the, 403
Etiology and pathology of inflammations of the mucous membrane of the upper air passages, 244
Etiology of dental caries, 493
Etiology of osseous deformities of the head, face, jaws and teeth, 371
Executive councils in State societies, 438
Extirpation of the dental pulp by the use of cocaine, 314

Filling root canals, 881
Fillings, marginal lines of, 159
Finishing alloy fillings, 218
Fitting bands to roots, 37
Fusible alloys, 284

Glazed paper, a protest against the use of, 127
Gold and amalgam, relative value of in filling teeth, 361
Gold, behaviour of under the plugger, 320
Gold crowns, the articulation of, 806
Gold filling on artificial teeth, to imitate, 373
Gray's anatomy, descriptive and surgical, 57
Grows his third set of grinders, 374

Handwork vs. machine work for dental operations, 6
Hayden Dental Society, program and officers of, 146
Healing wounds through mental suggestion, 67
Hiccoughed his teeth loose, 287
High light, shadow and middle tone of hypnotism, 377
Hobbies, 609
Horace Wells anniversary celebration, the, 839
How best to read, study and write dental literature, 350
Hypnotism, 853
Hypnotism fad, the, 116
Hypnotism in disease, 68

Illinois Board of Dental Examiners (List of questions for candidates), 148, 221
(Twelfth Annual Report), 284
Illinois State Dental Society, program of, 244
Immediate root filling, etc., 151
Inflammations of the mucous membrane of the upper air passages, etiology and pathology of, 244
Iowa State Dental Society, officers of, 445
Is the profession overcrowded, 825

Joint meeting of the Iowa and Nebraska State Dental Societies, 358
Jumping the bite, 293, 501, 699

La Revista Dental Americana, 65
Letter from Emma Eames Chase, 834.
Letter from Georgia, 761
Letter from H. J. Goslee, 687
Letter from Fritz W. Huxmann, 369
Letter from C. Edmund Kells, Jr., 538
Letter from A. W. McCandless, 208
Letters from New York, 42, 121, 202, 279, 364, 440, 533, 596, 679, 753, 828, 931
Letter from Louis Ottofy, 540
Letter from C. N. Pierce, 600
Letter from R., 444
Letter from E. A. Royce, 47
Letter from J. Leon Williams, 133
Letter from H. H. Wilson, 937
Local anæsthetics in dental surgery, 16, 180
London Letter, 128
Lubricate your disks and strips, 120

Manual of dental anatomy, human and comparative, 762
Manual of operative technics, 762
Marginal lines of fillings, 159
Matured thought, 563
Mechanical dentistry, a practical treatise on, 58
Medicine Case, my, 736
Mental suggestion, healing wounds through, 67
Minneapolis Dental Society (program), 71
Minnesota State Dental Association, 798, 865
Mississippi State Dental Association, officers of, 447
Modern anæsthesia, the discovery of, 283
My medicine case, 736

Nebraska State Dental Society, officers of, 446
New Jersey State Dental Society, 594
New medicines, their action and application in the mouth, 792
New mineral discovered, a (carborundum) 68
New remedies, a review of, 865

Ode to the dentist, 222
Odontographic Society of Chicago, 33, (officers), 66, (program), 69
Odontological Society of Chicago (officers) 65, 766
Odontological Society of Cincinnati (program and officers), 144
Old Point Comfort, the meetings at, 690
Opening address, 777
Operative dentistry, progress in, 886
Operative technics, 223, 323, 426, 516, 584, 627
Operative technics, manual of, 762
Oral surgery, 906
Orthodontia, reciprocation of force in, 572

Pamphlets received, 141, 284, 445, 688, 763
Pay your bills, collect your debts, 436
Pericementitis, the treatment of, 175
Platinum pointed tweezers, 199
Plugger points, the delivery of force by, 841
Points of common interest both to dental and naso-laryngeal surgeon, 473
Popular essays upon the care of the Teeth and Mouth, 141
Practical dental education, 771
Preparation and filling of proximate cavities in bicuspids and molars, 850
Preparation and shaping of roots of teeth with reference to banding and crowning, 620
Presentation of bronze medallion of the late Dr. W. W. Allport, 544, 768
President's address, 798
President's annual address (Hayden Dental Society), 98
Press back the festoons, 363
Progress in operative dentistry, 886

Proper terms, the use of, 594
Prosthetic dentistry in colleges, 747
Pulpless teeth, the treatment and filling of, as learned from papers read before the W. C. D. C., 712
Pulpless teeth, the treatment of, 743
Purifying water, 67
Pyorrhœa alveolaris, a treatise on, 542
Pyorrhœa Alveolaris, treatment of, 899
Pyrozone for bleaching teeth, 276

Reciprocation of force in orthodontia, 572
Record year license, 363
Relative to immediate root filling, and a few items concerning the management of teeth with pulps dead before treatment, 151
Relative value of gold and amalgam in filling teeth, 361
Report of committee on dental science and literature, 421
Resolutions on the death of Dr. H. H. Silliman, 765
Responsibilities of a teacher, the, 750
Restoration of the nose with porcelain, case of, 731
"Rhymes of the States," 375
Root canals, filling, 881

Setting bridges, 59
Some thoughts on the behavior of gold under the plugger, 320
Southern California Odontological Society, 939
Southern Illinois Dental Society, report of supervisor of clinics of the, 821
State dental boards and dental diplomas, 540
St. Louis Dental Society (officers) 65, (clinic), 270
Students' quiz series, the (surgery), 57
Studies in pyorrhœa alveolaris, 939
Success, the elements of, 403
Sulphuric acid for opening root canals, 62
Swaged aluminum plates, 481

Technic teaching in colleges, 277
Temperaments, 857
Test for cocaine, 373
Testing amalgam alloys, 752
The Alumni News, 764
The American Standard, 765
The Anatomy and Pathology of the teeth, 835
The articulation of gold crowns, 806
The awakening effect of cocaine, 145
The code of ethics, 274
The conversion of Dr. Greene, 537
The cracking of teeth in soldering, 141
The defect in the dentist, 146
The delivery of force by plugger points, 841
The dental degree, 273
The eruption of a third set of teeth, 930
The estimate of dentists by the public, 118
The festoons, press back, 363
The first permanent molar, some thoughts about, 782
The Horace Wells anniversary celebration, 839
The hypnotism fad, 116
The Knight combination crown, 814
The meetings at Old Point Comfort, 690
The prevention of caries, 199
The relation of the profession to our dental colleges, 409
The semicentennial of the discovery of anæsthesia, 533
The use of proper terms, 594
Thirty years ago and now, 547
Thought, matured, 563
Thoughts about the first permanent molar, some, 782
To imitate gold fillings in artificial teeth, 373.
To the readers of the DENTAL REVIEW, 34
Transactions of the Columbian Dental Congress, 752
Transactions of the Dental Society of the State of New York for 1892-1893, 372
Treatment and filling of pulpless teeth as learned from papers read at the W. C. D. C., 712
Treatment and filling of pulpless teeth, a word about the, 790
Treatment of pericementitis, the, 175
Treatment of pulpless teeth, 743
Treatment of pyorrhœa alveolaris, 899
Tri-city Dental Society (officers), 764

Use of proper terms, the, 594

Weeping and wailing in the sanctum, 447
What matters of importance do good operators most frequently neglect or overlook? 724
What the Dental Congress has taught us, 75
What the profession offers to young men, 112

Yet another professional holiday, 48, 135, 210

BIOGRAPHICAL INDEX.

Allen, A. B., 922
Allen, E. H., 850
Ames, W. V-B., 30, 180, 193, 674
Angle, E. H., 305

Bailey, C. M., 802, 818, 876, 906
Baldwin, A. E., 656
Banes, J. D., 712
Barrett, W. C,, 392
Bentley, C, E., 85
Betty, E. G., 127
Birge, Manning A., 314
Black, G. V., 186, 192, 193, 449, 698
Borland, T. J., 218
Brophy, Truman W., 103, 108, 110, 178, 409, 669
Brown, G. V. I., 377, 902, 910

Callahan, J. R., 62
Case, C. S., 293, 501, 572, 666, 671
Catching, B. H., 373
Chase, Emma Eames, 834
Clifford, E. L., 188, 190, 259, 263
Crouse, J. N., 33, 108, 262, 673.
Cunningham, George, 48, 135, 210
Curtis, W. W., 32

Davenport, ——, 895
Dennis, Geo. J., 36, 118, 159, 195, 358, 747
Dickinson, W. P., 806, 814
Dunn, J. Austin, 669

Fernandez, E. M. S., 188, 265, 924.
Fitch, H. H., 853
Freeman, Arthur B., 609, 661

Gallie, Don M., 195
Gilmer, T. L., 115, 196, 273, 530, 677, 922
Goodrich, C. H., 804, 876
Goslee, H. J., 687
Green, W. F., 837

Harlan, A. W., 27, 30, 34, 180, 188, 240, 266, 267, 269, 270, 421, 760
Harper, John G., 284
Harper, W. E., 254
Haskell, L. P., 141
Herbst, Wilhelm, 70
Hewett, A. C., 163, 264, 512, 537
Hinkins, J. E., 14, 32, 235, 268, 269, 270, 673
Huxmann, Fritz W., 369

Jenison, M. G., 878, 881
Johnson, C. N., 35, 37, 38, 39, 112, 116, 120 175, 193, 197, 199, 274, 275, 276, 277, 350, 358, 361, 363, 436, 438, 439, 533, 592, 594, 660, 679, 749, 750, 752, 825, 826, 827, 923
Jones, C. W., 905

Kells, Jr., C. Edmund, 538
Kester, P. J., 25, 248
Knight, Henry A., 814, 820, 876, 893, 897, 912
Kremer, F. B., 817, 818, 896, 917

Latham, Vida A., 658
Leonard, Lawrence P., 885, 896, 898

McCandless, A. W., 59, 208
Marshall, John S., 654
Martindale, J. H., 473
Matteson, A. E., 721
Menges, Alice, 403

Newkirk, Garrett, 1, 93, 168, 191, 279, 547, 671, 724
Noyes, Edmund, 6, 106, 151, 192, 194, 923, 925
Nutting, C. W., 801, 820

Oakey, A. J., 743
Ottofy, Louis, 75, 108, 109, 110, 194, 320, 540, 670, 777, 919
Ottolengui, R., 699

Palmer, Byron S., 652
Palmer, H. A., 782
Peck, A. H., 493
Pemberthy, ——, 886
Perry, George B., 857
Pierce, C. N., 600
Powell, T. Elhanan, 285
Pritchett, T. W., 416, 719

Ream, F. K., 664, 792
Reid, H. M., 820, 885, 911
Reid, J. G., 179, 266, 267, 672
Robinson, C. H., 812
Rohland, C, B., 736, 821
Roy, Maurice, 16, 180
Royce, E. A., 47, 179, 841

Sippel, C. H., 98
Sitherwood, George D., 481
Skelton, L. L., 771
Smith, A. G., 731
Stearns, C. H., 798
Steele, W. H., 803
Stephan, Louis J., 785
St. John, I. C., 881, 886, 895
Sudduth, W. X., 800, 820, 881, 899, 905, 906
Swasey, J. A., 923, 927

Talbot, Eugene S., 659
Taylor, C. R., 790
Tuller, R. B., 620, 674

Vance, W. W., 568
Van Duzee, C. A., 906.

Wassall, J. W., 32, 921
Weeks, T. E., 223, 323, 426, 516, 584, 603, 627, 690, 804, 812, 818, 876, 886, 897, 905, 911, 912
Weiss, O. A. 865, 877
Williams, Hugh Blake, 244
Williams, J. Leon, 133
Wilson, H. H., 10, 32, 937
Wilson, I P., 563
Wood, M. B., 803, 874, 876, 893, 897
Woolley, J. H., 924

OBITUARY.

Eames, William Henry, 291, 376
Godfrey, Walter John, 376
Henry, Charles, 698
Kelley, George Washington, 608
Rawls, Albert O., 448
Snowden, Henry, 220
Southwell, C. P., 546
Wells, Graham A., 546
Winder, Richard B., 607

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